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PROJECTS OF THE INDUSTRIAL POLLUTION CONTROL BRANCH

William J. Lacy

Federal Water Pollution Control Administration
Washington, D. C.

January 1970

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Projects of the Industrial Pollution Control Branch

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U.S. DEPARTMENT OF THE INTERIOR ● FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

PROJECTS

INDUSTRIAL POLLUTION CONTROL BRANCH

William J. Lacy, Chief

January 1970

Division of Applied Science and Technology
Office of Research & Development
Federal Water Pollution Control Administration
UNITED STATES DEPARTMENT OF THE INTERIOR

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INDUSTRIAL POLLUTION CONTROL TECHNOLOGY

INTRODUCTION

Industries use huge quantities of the Nation's waters and are the major factor in the continuing rise in water pollution. They utilize over 15 trillion gallons of water but, prior to discharge, treat less than 5 trillion gallons. In terms of a single pollution parameter (BOD), waste generated by industries are equivalent to a total population of over 360 million people. Even more undesirable than the BOD loads of industrial effluents are the enormous quantities of mineral and chemical wastes from factories which steadily become more complex and varied. They include metals such as iron, chromium, nickle, and copper; salts such as compounds of sodium, calcium, and magnesium; acids such as sulfuric and hydrochloric; petroleum wastes and brines; phenols, cyanides; ammonia; toluene; blast furnace wastes; greases; all varieties of suspended and dissolved solids; and numerous other waste compounds. These wastes degrade the quality of receiving waters by causing tastes, odors, and color; and excess mineralization, salinity, hardness, and corrosion. Some are toxic to plant and animal life.

The variety and complexity of inorganic and organic components contained in industrial effluents present a serious liquid wastewater treatment control problem in that the pollution and toxicity effects of these constituents are of greater significance than those found in domestic wastewaters.

Conventional wastewater treatment technology which is often adequate for existing waste types, offers even less promise of providing the type and degree of treatment to be required in the near future. Industrial pollution control technology, therefore, must be developed and demonstrated to achieve effective and economical control of pollution from such industries as those producing metal and metal products, chemical and allied products, paper and allied products, petroleum and coal products, food and kindred products, textiles and leather goods.

To continue the attack on the problem of industrial pollution will require a cooperative industry-government effort to conceive, research, develop, and demonstrate treatment processes, production modifications, water reuse and water conservation programs. The ongoing research and demonstrations, funded by Section 6 grants, have been made to manufacturers and processors representing about every major source of industrial pollution.

The continued and expanded support is urgently needed specifically to implement the demonstration R&D programs related to new or improved technology for the treatment, reuse, and/or disposal of industrial wastewaters and their sludge residues. Existing data suggests that about half of the total volumes of wastes processed by municipalities is of industrial origin. Emphasis must be continued to achieve the most effective water pollution control by means of joint municipal-industrial treatment. Another key area where the efforts must be expanded involves the demonstration of by-product recovery and utilization.

In this respect, the most promising and beneficial area requiring additional support is the implementation of closed-loop (water reuse) treatment systems for the industry.

An accelerated industrial pollution control research, development, and demonstration program will measurably decrease the amount of expenditures needed to accomplish these goals, increase the efficiency of treatment, and eliminate the gaps in treatment technology.

OBJECTIVE

The objective of the industrial pollution control R&D program is to develop and demonstrate the required technology to achieve required degrees of pollution control by least cost methods for all significant industrial sources of pollution.

PROGRAM OF WORK

The program includes all research, development, and demonstration efforts necessary to resolve industrial pollution problems.

The objectives will be met by using the research and development grant mechanism, supplemented by in-house laboratory programs. The IPCB*will implement and administer demonstration projects for new and novel industrial wastewater treatment projects applicable for the majority of all significant industries. These demonstrations will include the latest developments in physical, chemical, biological, and combinations of treatment methods. It is expected to develop further the cooperation of industry to participate in meaningful pollution abatement demonstrations and to increasingly demonstrate the feasibility of in-plant measures, by-product recovery, and wastewater reuse as methods to abate pollution and to reduce treatment costs.

Research through in-house efforts and by contracts to industries and universities are to complete state of the art studies related to treatment and control technology for selected industry groups. Similarly, industrial wastewaters are to be identified, characterized, quantitized and classified for all industries of pollutional significance.

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*The Industrial Pollution Control Branch

NEED(1)

Industrial wastes are the Nations principal point sources of controllable waterborn wastes. In terms of the generally quoted measurements of strength and volume, gross wastes of manufacturing establishments are about three times as great as those of the Nation's sewered population (reference Table 1). Moreover, the volume of industrial production, which gives rise to industrial wastes, is increasing at about 4.5% a year or three times faster than the population. Also significant is the variance of composition of industrial wastes, which contain all known pollutants of concern in water pollution abatement as well as some unidentified factors.

Table I shows reported quantities of industrial wastewaters discharged in 1963 and FWPCA estimates of the quantities of standard biochemical oxygen demand (BOD_5) and settleable and suspended solids contained in the wastewaters. The wasteload estimates, based upon an estimate of the "average" quantity of pollutant per product unit, indicate that the chemical, paper, and food and kindred industrial groups generated about 90% of the BOD_5 in industrial wastewater before treatment.

Similar statistics on net wasteload discharges are not completely available. However, indications are that the extent of industrial wastewater treatment is not greater than that currently practiced for municipal wastewaters.

Industrial wastes differ markedly in chemical composition, physical characteristics, strength, and toxicity from wastes found in normal domestic sewage. Every conceivable toxicant and pollutant of organic and inorganic nature can be found in industrial wastewaters, as indicated in Table II for selected industries. Thus, the BOD_5 or solids content often are not adequate indicators of the quality of industrial effluents. For example, industrial wastes frequently contain persistent organics which resist the secondary treatment procedures applied normally to domestic sewage. In addition, some industrial effluents require that specific organic compounds be stabilized or that trace elements be removed as part of the treatment process.

It is therefore necessary to characterize each industrial wastewater to permit comparative pollutional assessments to be made for individual industries as well as industry groups. Characterization will permit classifying the components of industrial wastewaters into as few as four basic classes of pollutants to more readily collate pollution statistics and to evaluate economics of methods of treatment as well as to project lease cost methods. Proposed generalized basic classification parameters are BOD, COD, SS, and TDS into which all known pollutants can be classed. Also required is the establishment of a relative pollution comparative index for all significant pollutants. This index in combination with the known characteristics and volume of a wastewater will determine the relative gross pollution severity of all industrial wastes and establish a basis for comparing the severity of pollution from industries.

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(1) Note the 1200 program described herein does not include thermal pollution requirement and associated problems.

Table III presents permissible criteria for surface water for public supplies as obtained from the Report of the Committee on Water Quality Criteria, April 1, 1968. The addition of an assumed BOD_5 value of 5mg/lto these criteria permits comparisons of the listed pollutants to be made against a unit of BOD. Under these circumstances it is relatively apparent that pollutants such as Endrin and Phenol (on a mg/l concentration equivalent basis) are 5000 times more critical as pollutants than BOD. Further work in this area will permit establishment of more accurate priorities in terms of our nations most critical needs.

Industrial wastes will require the development, demonstration, and evaluation of treatment methods suitable for each significant industrial waste type which is significantly different from domestic waste.

Table IV is a listing of all major industry groups and industries of suspected significant contributions to water pollution. These have been selected on the basis of a process water intake of at least 1 billion gallons per year and with regards to the potential for pollution from the process use of the water. For program planning and budgeting purposes, the industries are grouped into thirteen subprogram elements as shown in column two of Table VI. Within each element, the identity of industry group(s) by their Standard Industrial Classification code number is also presented as in column two of Table IV.

The industries listed in Table IV number approximately 150 and represent potentially equally numerous wastewaters of significantly different characteristics, for which treatment technology must either be developed or upgraded. The interchangeability of treatment technology between similar types of wastewaters is anticipated but will have to be demonstrated through results of grant research projects, or in house studies. Because resource allocations may not be sufficient to encompass the potential R&D demand imposed by the diverse nature of industrial wastes, a priority system must be established and used in the allocation of R&D efforts for industrial wastewater problems.

At this time a firm priority for R&D activities based on an ultimate comparable basis of pollution severity, has not been established for industrial wastes. However, a cursory examination of Table I, and assuming the (BOD_5) parameters of pollution severity as the prime indicator of pollution, initial basis for ranking the industry groups for priority R&D efforts, is possible. However, knowledge of all chemical and physical parameters of pollution, as well as the state of the art and economic considerations are necessary to more adequately assess priority for R&D investments.

Table V lists National Priorities for pollution sources. These were established on the basis of best available informatiom in order to establish the initial base.

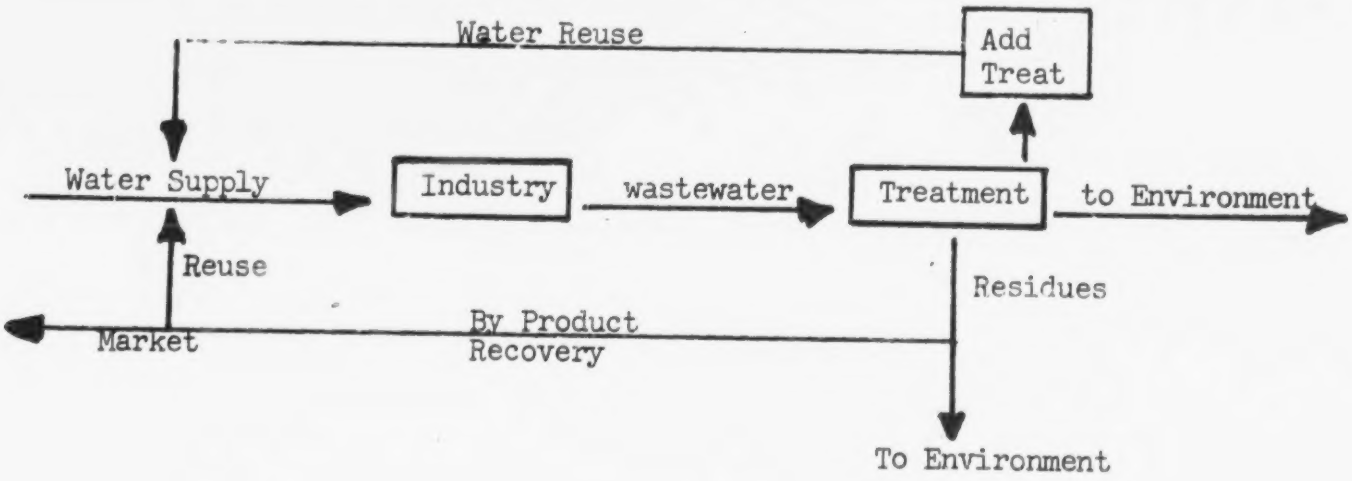
In spite of the complexity and magnitude of industrial pollution, initial estimates of the costs of clean waters from industrial sources have been made. As summarized in Table VII industrial capital requirements to abate pollution by 1973 to the extent of providing 85% treatment effectiveness, are substantially less than estimated capital requirements for municipal treatment or collection facilities for separting combined sewers, while the gross pollutional load contributed is substantially greater than either. This indicates that the average cost of industrial waste treatment is substantially less than for municipal waste treatment when based on treatment cost per lb BOD. If these estimates are reasonably accurate it would appear that for the most part industrial pollution control to the equivalency of secondary treatment is within a reasonable cost and need only be developed and demonstrated for the various industries in our economy which are significant contributors of pollution.

In summary the needs show that the 1200 program must be primarily dedicated to the attainment of:

1. Qualifying and quantitizing industrial wastes and treatment practices.
2. Implementation of undemonstrated but feasible treatment methods to as many types of industries as possible.
3. Reduce cost of treatment by the beneficial recovery and reuse of wastewater contaminants.

PLAN

1. Technical Consideration: The alternatives in wastewater treatment are shown in summary flow diagram below.



The alternatives shown primarily consist of:

- a. Wastewater Treatment (as required to abate pollution to meet water quality standards)
  - (1) for discharge (to meet necessary water quality criteria)
  - (2) for reuse (to meet industrial water quality demands to conserve water and offset cost of treatment).
- b. In-plant Measures (to reduce pollutants and water discharge)
  - (1) Operational (housekeeping techniques and manufacturing procedures)
  - (2) Design (to permit reuse, to reduce wastewater generation)
- c. Residue Treatment
  - (1) By-product recovery (to reduce gross disposal, utilizes values)
  - (2) Residue stabilization (to meet environmental standards)
- d. Combined Methods
  - (1) Joint Treatment (to utilize scale factors, off peak capacity, synergistic effects)
  - (2) Others (combined a-b-c methods as appropriate)

The alternatives best suited for implementation in specific 1200 programs will depend on many factors and local conditions. Where the state-of-art of treatment is essentially non-existing, emphasis on treatment to meet environmental standards should prevail. For nonprogressive industries, in-plant measures should be explored for potential application. For industries which have demonstrated effective treatment methods, lower cost alternatives of treatment stressing reuse and by-product recovery should be given consideration.

GOALS

1. General: To provide each basic industry the demonstrated, developed, and evaluated technology for the abatement or prevention of water pollution from individual or multiple wastewater sources, by new or improved methods and techniques which have potential value for industry wide application where no methods exist or over existing methods employed.

In summary, to upgrade the state-of-art for the treatment of all industrial wastewaters.

2. Specific:
  - a. Technical
    1. Define pre and post program state-of-art.
    2. Establish and maintain centers of excellence to assist in state-of-art maintenance.
    3. Develop cooperation of industry to maintain state of art.
    4. Develop technical, design and operational guides for each industrial waste of significance.
    5. Characterize industrial wastewaters and classify the pollutants into the four major categories of BOD, COD, TDS or SS.
    6. Develop comparable criteria for pollutional severity of contaminants.
    7. Establish relative severity of industrial wastewater pollutants in terms of total discharges.

b. Economic:
   1. Develop comparable basis for economic evaluation of industrial waste treatment.
   2. Determine pre and post program, economics of industrial wastewater treatment.
   3. Show that cost of adequate wastewater treatment will not exceed 2 to 4% of the total cost of industrial operations.

c. Demonstrate for each industry of significance:
   1. Feasibility of effective treatment ($\geqq$85% removal) systems
   2. Effective ($\geqq$85% removal) treatment systems within the following costs:

for BOD removal = 13.5¢/1000 gal or = 1¢/lb BOD
for COD " = 14¢/1000 gal or = 3¢/lb COD
for TDS " = 15¢/1000 gal or = .05¢/lb TDS
for SS " = 6¢/1000 gal or = 1¢/lb SS

   3. Least cost methods either directly or through inference from the results of program activities.
   4. By-produce recovery and wastewater reuse as feasible methods of pollution control.
   5. Total wastewater reuse and residue conversion to recover values.

ORGANIZATION

1. General: The organization of the 1200 program showing interrelationships of activities to meet objectives and goals is shown on page 8 and in Table VI. The outline form shows the program to consist of three major efforts, administrative, activities development, and implementation of projects.

ORGANIZATION OUTLINE

1. Administration
    a. Centers of excellence
    b. Activities Development
    c. Implementation program
2. Activities Development
    a. Centers of excellence
        1. Technical Information Activities
            a. Wastewaters characterization
            b. Criteria for pollutants comparability
            c. Standards of performance
        2. Economic Bases
            a. Demonstration Grants
            b. Industry Wide Impact
    b. State of Art
        1. Initial (by contract)
        2. Periodic (In-house)
        3. Terminal (In-house)
    c. Cooperation of Industries
        1. Participation in implementation program (though grants and contracts)
        2. To develop wastewater treatment standard (In-house & with respective mfg. association)
        3. Maintain R&D implementation
        4. Disseminate information
3. Implementation Projects
    a. Research
    b. Development
    c. Demonstration & Evaluation
    d. Technical-Economics of Wastewater treatment processes

It should be apparent that extensive cooperation and communication among all participants and activities will be required.

The program is orientated to upgrade the state-of-art for industrial waste treatment to the extent that industries will thereafter continue to maintain the art in a progressive manner with minimum Federal R&D assistance. Therefore, it is imperative that the cooperation of industry be attained in the earliest phases of this program.

SCHEDULE AND MILESTONES

There are three major milestones to be demonstrated for each major industry category. Attainment of these milestones will provide an upgraded state-of-art for industrial wastewater treatment which will allow substantial decreased Federal R&D efforts to subside in favor of industry's own continued maintainence program.

The major milestones are:

1. Demonstration of the equivalence of secondary treatment for all industries of significance within each industrial category. The equivalence of secondary treatment is the removal of about 85% of the primary pollutants from industrial wastewaters.

2. Development and demonstration of the necessary treatment requirements for industrial wastewaters of significance to the extent required to meet state and local water quality criteria. In a majority of cases this requirement can be attained by the removal of up to 98% of primary pollutants, or the removal to a high degree (85%) of secondary but significant contaminantes from industrial wastewaters.

3. Develop and demonstrate the means to control all major pollutants from all industries.

These milestones are to be attained in the years as shown in Table IX for the industrial categories indicated.

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FWPCA Report No.	Tile, Author
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ORD-2	"Disposal of Wastes from Water Treatment Plants." American Water Works Association Research Foundation, August 1969, 12120 ERC, WP 1535-01-69.
ORD-5	"Activated Sludge Treatment of Chrome Tannery Wastes." A. C. Lawrence Leather Company, August 1969, 12120 --- WPRD 133-01-68.
DAST-3	"Foam Separation of Kraft Pulping Wastes." Georgia Kraft Company, September 1969, 12040 EUG, WPRD 117-01-68.
DAST-8	"Aerobic Treatment of Fruit Processing Wastes." Snokist Growers, Inc. October 1969, 12060 FAD, WPRD 58-01-68.

TABLE I. ESTIMATED VOLUME OF INDUSTRIAL WASTES BEFORE TREATMENT, 1963

PPB Code	SIC 4/ Code	Industry Group(s)	Total 7/ Waste-water, billion gal.	Process Water Intake-Billion gallons	Standard Bio-Chem. Oxygen Demand Million	Settleable and Suspendes Solids, Million pounds
1201	33,34	Metal & Metal Products	>4,300	1.000	>480	>4,700
1202	28	Chemical & Allied Products	3,700	560	9,700	1,900
1203	---	Power Production	(NA) 6/	N.A. 5/	N.A. 5/	N.A. 5/
1204	26	Paper & Allied Products	1.900	1,300	5,900	3,000
1205	29	Petroleum & Coal	1.300	88	500	460
1206	20	Food & Kindred Products	690	260	4,300	6,600
1207	35,36,37	Machinery & Transportation Equip.	≥481	109	≥250	≥90
1208	32	Stone, Clay, and Glass Products	(218) 6/	88	N.A.	N.A.
1209	22	Textile Mill Products	140	110	890	N.A.
1210	24,25	Lumber & Wood Products	(126) 6/	57	N.A.	N.A.
1211	30	Rubber & Plastics	160	19	40	50
1212	12,19,21,27 31,38,39,72	Miscellaneous Industrial Sources	450	190	>390	>930
1200		All Manufacturing	≧13,100	≧3,700	≧22,000	≧18,000
		For Comparison: sewered population of U. S.	5,300 1/	N.A.	7,300	8,800 3/

1/ 120,000,000 persons x 120 gallons x 365 days
2/ 120,000,000 persons x 1/6 pounds x 365 days
3/ 120,000,000 persons x 0.2 pounds x 365 days

4/ Standard Industrial Classification
5/ Not Available or Not Applicable
6/ Included in Total for All Mfg.

7/ Includes cooling water and Steam production waters.

(1) Ref: Volume II - The Cost of Clean Waters. 1968.

TABLE II*
WASTEWATER CHARACTERISTICS AND POLLUTANTS OF SELECTED INDUSTRY GROUPS

SIC CODE		201	203		22	26	281	282		2911	3111	331	3334		3722
Liquid Waste Characteristic	Domestic	Meat Products	Canned & Frozen Foods	Sugar	Textile Mill Products	Paper & Allied Products	Basic Chemicals	Fibers Plastics & Rubbers	Fertilizer	Petroleum Refining	Leather Tanning & Finishing	Steel Rolling & Finishing	Primary Aluminum	Motor Vehicles & Parts	
UNIT VOLUMES	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
pH		x		x	x	x	x	x	x	x	x	x	x	x	
ACIDITY		x		x			x		x	x	x	x	x	x	
AKALINITY				x	x	x	x			x	x	x		x	
COLOR					x	x	x	x		x	x			x	
ODOR					x		x	x		x				x	
TOTAL SOLIDS		x		x	x	x	x	x	x		x	x	x	x	
SUSPENDED SOLIDS	x	x	x	x	x	x	x	x		x	x	x		x	
TEMPERATURE		x				x	x	x	x			x		x	
BOD5/BOD ultimate	x	x	x	x	x	x	x	x		x	x	x		x	
COD	x						x	x		x		x		x	
OIL & GREASE		x		x	x	x	x	x		x		x		x	
DETERGENTS	x														
Surfactants					x	x	x	x						x	
CHLORIDE		x				x	x	x		x	x	x		x	
HEAVY METALS															
Cadmium							x							x	
Chromium					x		x				x			x	
Copper					x		x							x	
Iron							x			x		x		x	
Lead							x							x	
Manganese							x			x				x	
Nickel							x							x	
Zinc					x		x							x	
NITROGEN															
Ammonia		x		+	x	x	x		x	x	x	x			
Nitrate					x		x								
Nitrite					x		x								
Organic		x		x		x	x			x	x				
Total		x			x	x	x		x		x				
PHOSPHORUS		x					x		x						
PHENOLS					x		x	x		x		x		x	
SULFIDE					x	x	x			x	x	x			
TURBIDITY	x				x		x			x					
SULFATE					x	x	x	x		x	x				
THIOSULFATE					x		x								
MERCAPTANS						x	x			x					
LIGNINS						x									
SULFUR						x	x								
PHOSPHATES						x	x		x						
POTASSIUM						x	x			x					
CALCIUM						x	x			x					
POLYSACCHARIDES						x	x								
TANNIN						x					x				
SODIUM						x	x			x	x				
FLUORIDES							x		x	x		x	x		
SILICA							x		x					x	
TOXICITY					x		x	x							
MAGNESIUM										x					
AMMONIA							x		x	x		x			
CYANIDE							x				x	x			
THIOCYANATE							x					x		x	
FERROUS IRON						x	x					x			
SULFITE							x								
ALUMINUM							x								

*Ref. – Volume II – The Cost of Clean Waters 1968

TABLE III

Comparative Pollution Index Based on Surface Water Criteria for Public Water Supplies

Constituent or characteristic	Permissible Criteria	Relative Criteria	Paragraph
Physical:			
Color (color units)	75		
Odor			1
Temperature*	Narrative		2
Turbidity	do		3
Microbiological:	do		4
Coliform organisms			
Fecal coliforms	10.000/100 ml		5
Inorganic chemicals:	2.000/100 ml		5
Alkalinity	(mg/l)		
Ammonia	Narrative		6
Arsenic*	0.5 (as N)	0.1	7
Barium	0.05	0.01	3
Boron	1.0	0.2	8
Cadmium*	1.0		9
Chloride*	0.01		8
Chromium*, nexavalent	250	50	8
Copper*	0.05		8
Dissolved oxygen	1.0		8
	≥4 (monthly mean)		8
			10
Fluoride*	≥3 (individual sample)		
Hardness*	Narrative		11
Iron (filterable)	do		12
Lead*	0.3		8
Manganese* (filterable)	0.05	.01	8
Nitrates plus nitrites*	0.05	.01	8
pH (range)	10 (as N)		13
Phosphorus*	6.0–8.5		14
Selenium*	Narrative		15
Silver	0.01		8
Sulfate*	0.05		8
Total dissolved solids*	250	50	8
(filterable residue).	500	100	16
Uranyl ion*	5	1	17
Zinc*	5	1	8
Organic chemicals:			
Carbon chloroform extract* (CCE)	0.15		
Cyanide*	0.20		18
Methylene blue active substances*	0.5		8
Oil and grease*			
Pesticides:	Virtually absent		20
Aldrin*	0.017		
Chlordane*	0.003		21
DDT*	0.042		21
Dieldrin*	0.017		21
Endrin*	0.001		21
Heptachlor*	0.018	.0002	21
Heptachlor epoxide*	0.018		21
Lindane*	0.056		21
Methoxychlor*	0.035		21
Organic phosphates plus	0.1		21
carbamates.*			21
Toxaphene*	0.005		
Herbicides:			8
2.4Dplus 2.4.5-T,plus 2.4.5-TP*	0.1	.02	
Phenols*	0.001	.0002	21
Radioactivity:	(pc/l)		8
Gross beta*	1.000		
Radium-226*	3		8
Strontium-90	10(4)		8
BOD	5	1	8

* The defined treatment process has little effect on this consituent.

(1) Microbiological limits are monthly arithmetic averages based upon an adequate number of samples. Total coliform limit may be relaxed if fecal coliform concentration does not exceed the specified limit. (2) As parathion in cholinesterase inhibition. It may be necessary to resort to even lower concentrations for some compounds or mixtures. See Paragraph 21.

(3) All relative to BOD

(4) Max. value found in tap water analysis of 20 communities

(5) Report of the Committee on Water Quality Criteria, April 1, 1968

TABLE IV

STANDARD INDUSTRIAL CLASSIFICATION OF INDUSTRIES OF SIGNIFICANCE FOR WATER POLLTUION

CODE	FOOD AND KINDRED PRODUCTS
201	Meat products
2011	Meat slughtering plants
2013	Meat processing plants
2013	Meat processing plants
2015	Poultry dressing plants
202	Dairies
2021	Creamery butter
2021	Creamery butter
2022	Natural and precess cheese
2023	Condensed and evaporated milk
2026	Fluid milk
203	Canned and frozen foods
2033	Canned fruits and vegetables
2034	Dehydrated foods products
2035	Pickles, sauces, salad dressings
2037	Frozen fruits and vegetables
204	Grain mills
2041	Flour mills
2043	Cereal preparations
2046	Wet corn milling
205	Bakery products
206	Sugar
207	Candy and related products
208	Beverages
2082	Malt liquors
2084	Wines and bt brandy
2085	Distilled liquor,
2086	Soft drinks
209	Miscellaneous foods and kindred products
2091	Cottonseed oil mills
2092	Soybean oil mills
2094	Animal and marine fats and oils
2096	Shortening and cooking oils
	TEXTILE MILL PRODUCTS
2211	Weaving mills, cotton
2221	Weaving mills, synthetice
2231	Weaving, finishing mills, wool
225	Knitting mills
226	Textile finishing, except wool
228	Yarn and thread mills
229	Miscellaneous textile goods
24	LUMBER AND WOOD PRODUCTS
242	Sawmills and planning mills
2421	Sawmills and planning mills

CODE	
26	PAPER AND ALLIED PRODUCTS
2611	Pulp mills
2621	Paper mills, except building
2631	Paperboard mills
264	Paper and paperboard products
265	Paperboard containers and boxes
2661	Building paper and board mills
28	CHEMICALS AND ALLIED PRODUCTS
281	Basic chemicals
2812	Alkalies and chlorine
2818	Organic chemicals, n.e.c.
2819	Inorganic chemicals, n.e.c.
282	Fibers, plastics, rubbers
2821	Plastics materials & resins
2823	Cellulosic man-made fibers
2824	Organic fibers, noncellulosic
283	Drugs
284	Cleaning and toilet goods
2851	Paints and allied products
2861	Gum and wood chemicals
287	Agricultural chemicals
289	Miscellaneous chemical products
29	PETROLEUM AND COAL PRODUCTS
2911	Petroleum refining
295	Paving and roofing materials
30	RUBBER AND PLASTICS PRODUCTS, n.e.c.
3069	Rubber products, n.e.c.
3079	Plastics products, n.e.c.
31	LEATHER AND LEATHER PRODUCTS
3111	Leather tanning and finishing
32	STONE, CLAY, AND GLASS PRODUCTS
3211	Flat glass
3341	Cement, hydraulic
325	Structural clay products
326	Pottery and related products
327	Concrete and plasær products
3281	Cut stone and stone products
329	Nometallic mineral products
33	PRIMARY METAL INDUSTRIES
331	Steel rolling and finishing
332	Iron and steel foundries
333	Primary nonferrous metal
3341	Secondary nonferrous metals

TABLE V

SOURCES OF POLLUTION NATIONAL PRIORITIES*

No.	Source	Priority	PPB Category
1	Pulp & paper industry	1	1204
2	Municipal sewered waste	2	1101
3	Power (thermal) production	3	1203
4	Agriculture run-off	4	1302
5	Storm & combined sewers	5	1102 1103
6	Food processing industry	6	1206
7	Petrochemical industry	7	1202
8	Irrigation return flow	8	1303
9	Petroleum refining industry	9	1205
10	Feed lots	10	1304
11	Metal & metal products industry	11	1201
12	Unsewered domestic waste	12	1105
13	Marine	13	1501
14	Dredging	14	1507
15	Oil pollution & production	14	1402
16	Organic chemical industry	14	1202
17	Acid Mines	16	1401
18	Impoundments	16	1504
19	Recreation boats	16	1501
20	Unsewered urban run-off	17	1104
21	Textile industry	18	1209
22	Inorganic chemical industry	19	1202
23	Commercial vessels	20	1502
24	Construction activities	21	1503
25	Potato processing	22	1206
26	Pharmaceutical manufacture	23	1202
27	Pesticide industry	24	1202
28	Saltwater intrusion	25	1505
29	Phosphate mining	26	1404
30	Logging	27	1301
31	Milk products & handling	28	1206
32	Fertilizer manfacture	29	
33	Fish processing industry	30	1206
34	Lumbering	31	1210
35	Mining	32	1404
36	Coal processing	33	1205
37	Strip mining (coal; sand & gravel)	34	1404
38	Uranium mining	35	1403
39	Meat packing	36	1206
40	Natural pollution	36	1506
41	Canning industry	37	1206
42	Sugar beet industry	37	1206
43	Cattle industry	37	1304
44	Brines	38	1212
45	Copper mining	39	1404
46	Log storage	39	1210
47	Agricultural chemical production	40	1202
48	Tanning & leather industry	41	1212
49	Nuclear installations	41	1212
50	Brewery wastes	42	1206

*Developed 1967-1968

TABLE VI

RESEARCH AND DEVELOPMENT PROGRAM

SUBPROGRAMS

SUBPROGRAM ELEMENTS

- 11 MUNICIPAL-POLLUTION CONTROL TECHNOLOGY
  - 1101 Sewered Wastes
  - 1102 Combined Sewer Discharges
  - 1103 Storm Sewer Discharges
  - 1104 Non-Sewered Run-off
  - 1105 Non-Sewered Municipal Wastes
  - 1106 Joint (Mun./Ind.) Wastes
- 12 INDUSTRIAL-POLLUTION CONTROL TECHNOLOGY
  - 1201 Metal and Metal Products
  - 1202 Chemicals and Allied Products
  - 1203 Power Production
  - 1204 Paper and Allied Products
  - 1205 Petroleum and Coal Products
  - 1206 Food and Kindred Products
  - 1207 Machinery and Transportation Equipment
  - 1208 Stone, Clay and Glass Products
  - 1209 Textile Mill Products
  - 1210 Lumber and Wood Products
  - 1211 Rubber and Plastic
  - 1212 Miscellaneous Industrial Sources
- 13 AGRICULTURAL-POLLUTION CONTROL TECHNOLOGY
  - 1301 Forestry and Logging
  - 1302 Rural Run-off
  - 1303 Irrigation Return Flows
  - 1304 Animal Feed Lots
  - 1305 Non-Sewered Rural Wastes
- 14 MINING-POLLUTION CONTROL TECHNOLOGY
  - 1401 Mine Drainage
  - 1402 Oil Production
  - 1403 Uranium
  - 1404 Other Mining Sources
- 15 OTHER-SOURCES-OF- POLLUTION CONTROL TECHNOLOGY
  - 1501 Recreational
  - 1502 Commercial Vessels
  - 1503 Construction Projects
  - 1504 Impoundments
  - 1505 Salt Water Intrusion
  - 1506 Natural Pollution
  - 1507 Dredging and Landfill
  - 1508 Oil Pollution
- 16 GENERAL POLLUTION CONTROL TECHNOLOGY
  - 1601 Eutrophication
  - 1602 Physical-Chemical Identification of Pollutants
  - 1603 Biological Identification of Pollutants
  - 1604 Source of Pollutants
  - 1605 Fate of Pollutants in Surface Waters
  - 1606 Fate of Pollutants in Ground Waters
  - 1607 Fate of Pollutants in Coastal Waters
  - 1608 Water Quality Control
  - 1609 Water Resources Planning and Resources Data
  - 1610 Cold Climate Research
  - 1611 Basic Research
  - 1612 Great Lakes Research
- 17 WASTE TREATMENT & ULTIMATE DISPOSAL TECHNOLOGY
  - 1701 Dissolved Nutrient Removal
  - 1702 Dissolved Refractory Organics Removal
  - 1703 Suspended and Colloidal Solids Removal
  - 1704 Dissolved Inorganics Removal
  - 1705 Dissolved Biodegradable Organics Removal
  - 1706 Microorganisms Removal
  - 1707 Ultimate Disposal
  - 1708 Waste Water Renovation and Re-use
  - 1709 General Waste Treatment Technology
- 18 WATER QUALITY REQUIREMENTS
  - 1801 Municipal Uses
  - 1802 Industrial Uses
  - 1803 Agricultural Uses
  - 1804 Recreational Uses
  - 1805 Fish and Other Aquatic Life
  - 1806 Other Single Uses
  - 1807 Multiple Uses
- 19 PROGRAM DIRECTION AND SUPPORT
  - 1901 Program Direction
  - 1902 Grants and Contracts Adm. Management

RESEARCH AND DEVELOPMENT
PROGRAM STRUCTURE

Office of R&D
FWPCA
October 17, 1967

TABLE VII

POLLUTION CONTROL PROGRAM SUMMARY

Pollution Control Program	Cost for Pollution Abatement by 1973 - Billions of Dollars: Current Cap. Inv.	Required Cap. Inv. 67 - 73	O&M 67 – 73	Total	Relative Gross Pollution Load (BOD) Basis)	Present Gross Load Treated (1962 - 64)	Relative Wastewater Volume	Waste Type	Projected Total Water Use Increase (% change 1954 - 2000)
Industrial Pollution Control	2.4 - 2.9	2.5 - 4.5	3 - 3.9 (.35 - .43 in 67)	5.5 - 8.4	3.0(6)	$\approx$ 35%	0.71 (process waters only) (.18 jointly)	All types	716
Municipal (1) Pollution Control	$\approx$ 40	8 - 8.7	1.4 - 1.7 (.2 in 67)	9.4 - 10.4	1.0(7)	$\approx$ 40%	1.0	Primarily	238
Combined Sewer and Storm Overflow Control	$\geq$ 60 (for waste collection system)	6.2 (2)	NA	$\geq$ 6.2	= 0.4	$\approx$ 60%	0.1 for overflows	Domestic	238
		25(3)	NA	$\geq$ 25	= 0.1 (8)	NA(5)			
		49(4)	NA	$\geq$ 49					

(1) Includes Joint Treatment

(2) For Sanitary Sewers

(3) Storm Sewer Requirements for Urban Areas

(4) Complete Separation of Combined Sewers into Sanitary and Storm Sewers

(5) Not Applicable or Available

(6) Currently Jointly Treated

(7) Based on 120 Million Sewered Population

(8) For Overflows of Combined Systems

TABLE V

Total current value of waste treatment requirements
of major industrial establishment*

Industry	Fiscal 1969 estimate	Fiscal 1973 By Census projection
Food and kindred products	740	670
Textile mill products	170	170
Paper and allied products	320	920
Chemical and allied products	380	1000
Petroleum and coal	380	270
Rubber and plastics	41	59
Primary metals	1500	1400
Machinery	39	56
Electrical machinery	36	51
Transportation equipment	220	160
All other manufacturing	200	290
Total capital requirement	4000	5000
Plant currently provided:		
By industry	2200	1800
Through municipal facilities	730	640
Current backlog	1100	2600

* Assuming at least 85% reduction of standard biochemical oxygen demand (determined according to the five- day test) and of settleable and suspended solids.

** All values rounded to two significant figures; constant dollars.

† Based upon Industrial Waste Profiles in Volume III of the report.

†† Based upon Census of Manufacturers data and established treatment cost factors.

TABLE IX

PROGRAM SCHEDULE OF MILESTONES

PPB	Industrial Category Milestones	Secondary Treatment Equivalence	Treatment Required to meet Water Quality Criteria	Treatment Required to Control all Major Pollutants
1201	Metal & Metal Products	1971	1973	1975
1202	Chemicals & Allied Products	1972	1974	1976
1203	Power Production	1972	1973	– – –
1204	Paper and Allied Products	1970	1973	1975
1205	Petroleum & Coal Products	1971	1973	1975
1206	Food and Kindred Products	1970	1973	1975
1207	Machinery & Transportation Equip.	1971	1973	1975
1208	Stone, Clay & Glass Products	1972	1973	– – –
1209	Textile Mill Products	1971	1973	1975
1210	Lumber & Wood Products	1971	1973	1975
1211	Rubber & Plastics	1971	1973	1975
1212	Miscellaneous Industrial Sources	1972	1974	1976

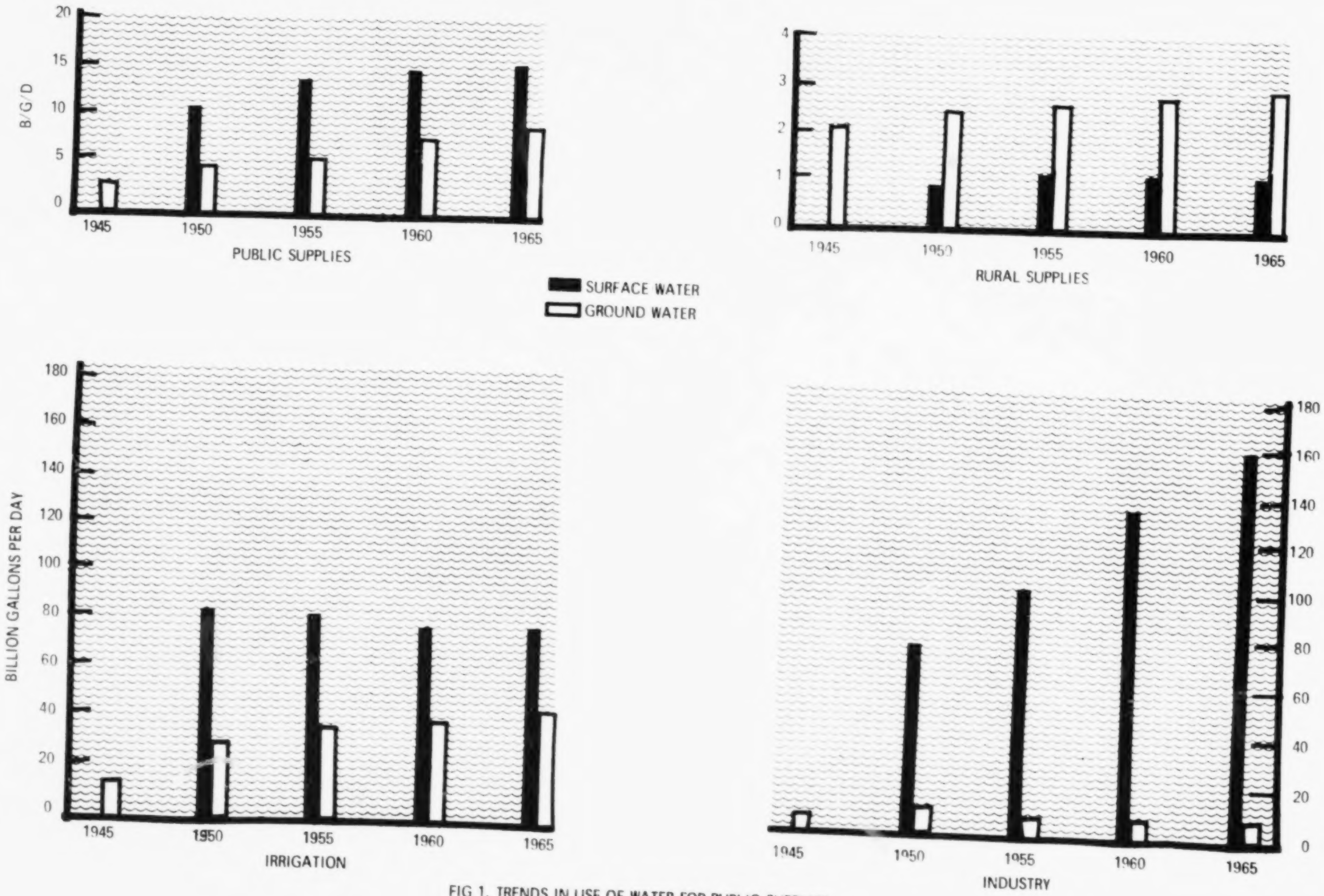


FIG 1. TRENDS IN USE OF WATER FOR PUBLIC SUPPLIES, RURAL SUPPLIES, IRRIGATION, AND INDUSTRY, 1945-65

Note: Surface-water data for 1945 not available.

INDUSTRIAL POLLUTION CONTROL BRANCH PROJECTS

FIGURE II
"Dollar Value of Projects"

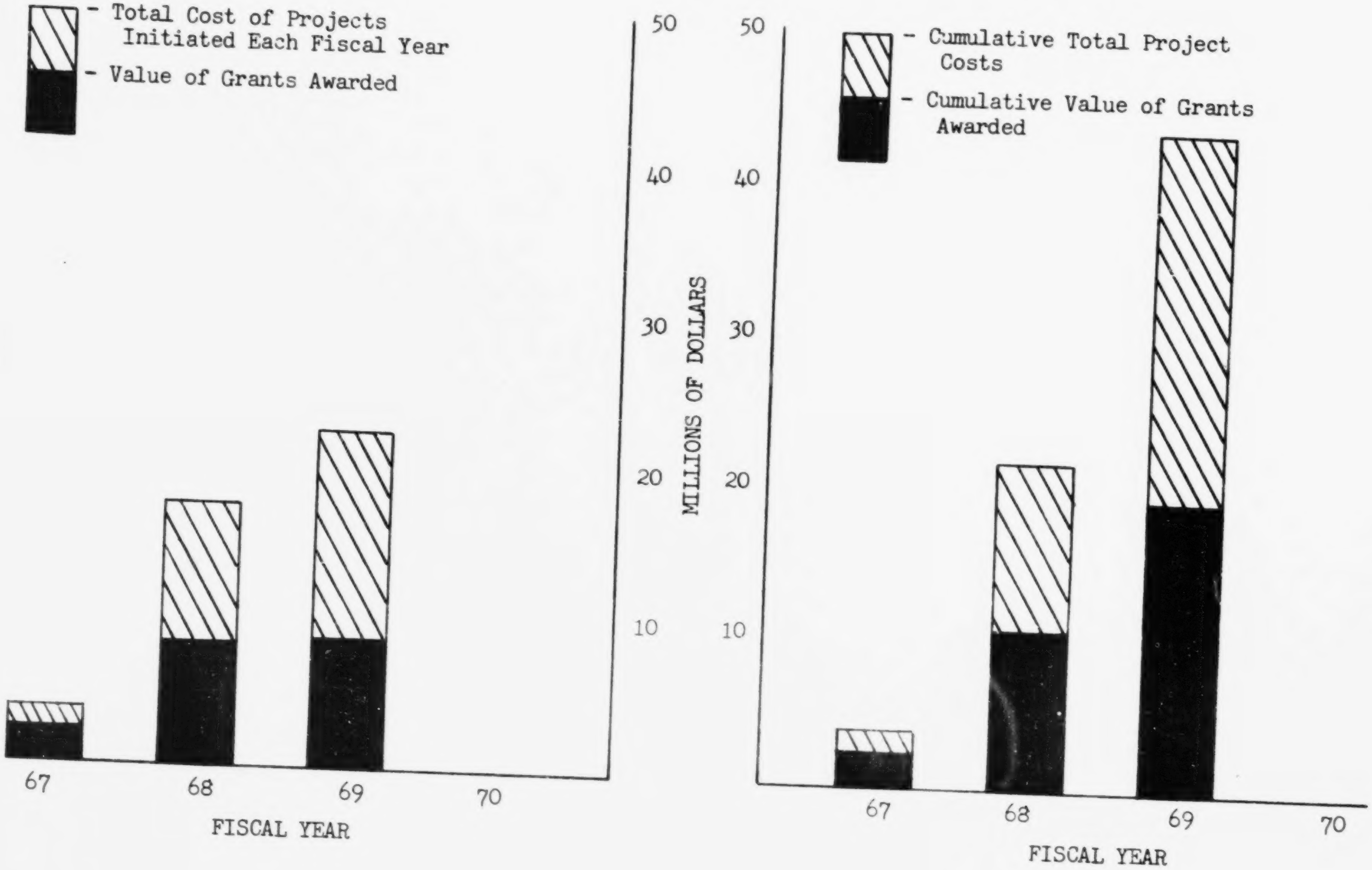
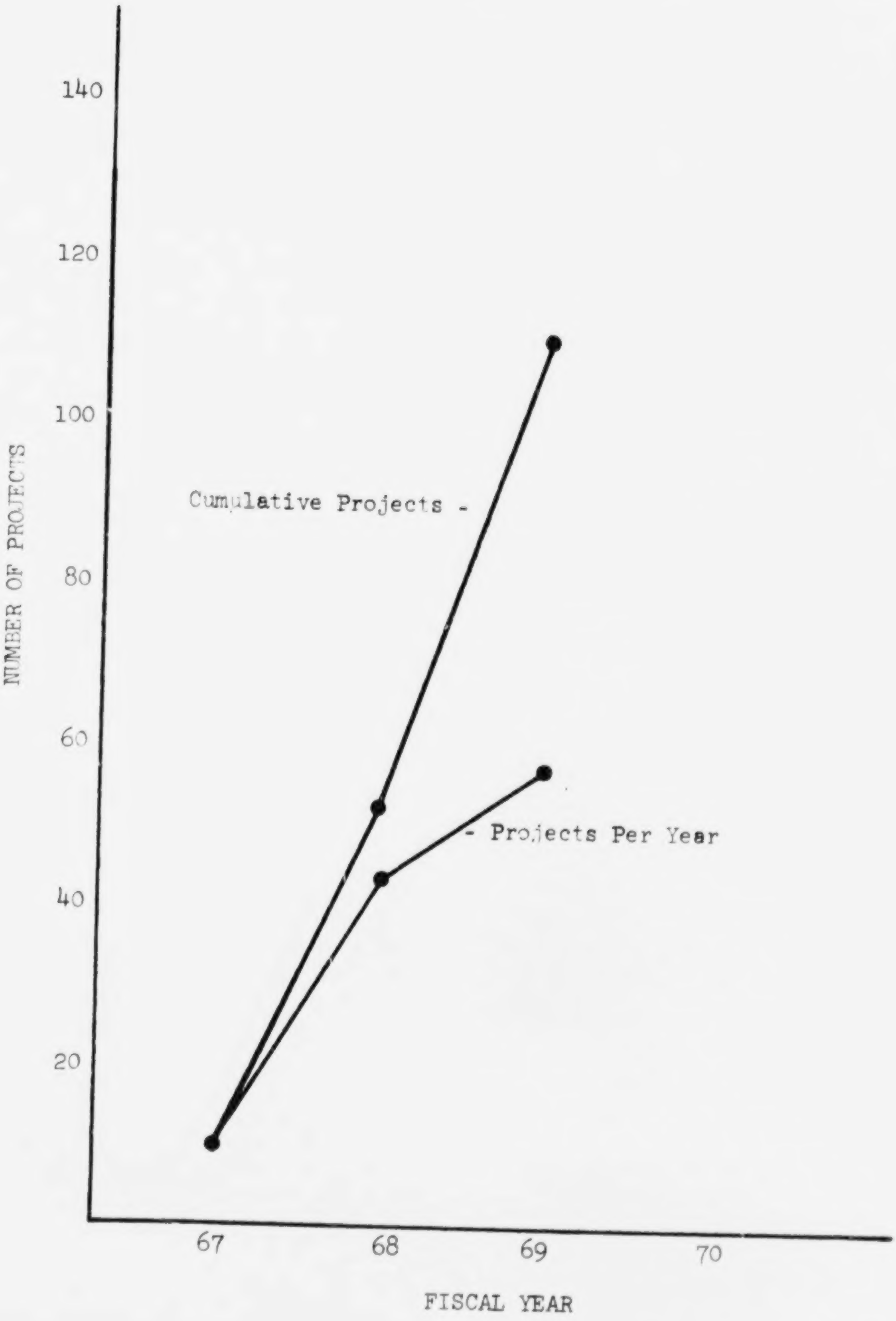


FIGURE III

INDUSTRIAL POLLUTION CONTROL BRANCH
PROJECT PARTICIPATION



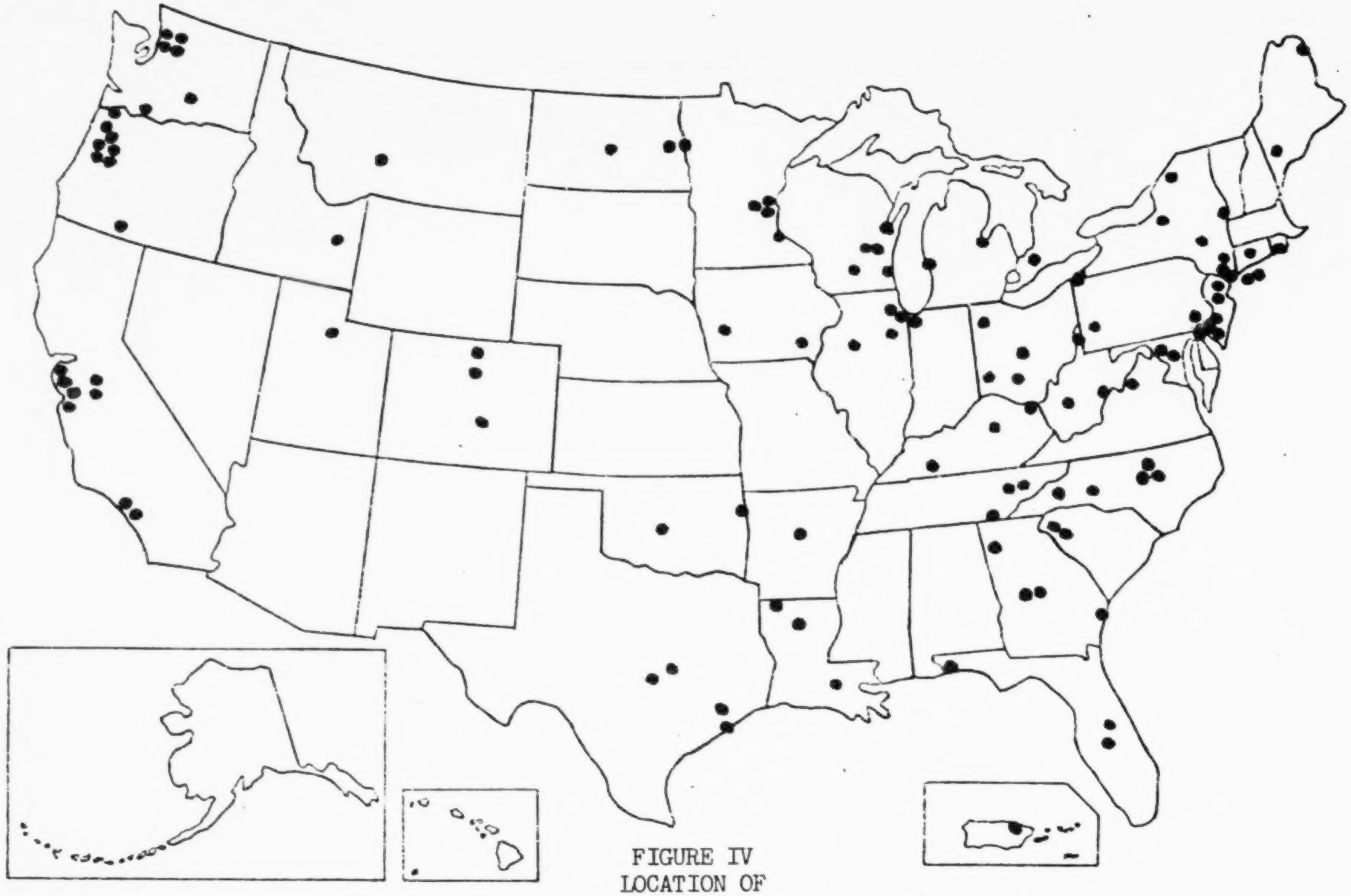


FIGURE IV
LOCATION OF
INDUSTRIAL POLLUTION CONTROL BRANCH
RESEARCH, DEVELOPMENT, AND DEMONSTRATION CONTRACTS AND GRANTS

PPB 1106

JOINT MUNICIPAL-INDUSTRIAL

WPRD	11060 Letters	To	GPO	PM
27	DLF	Tualatin, Oregon	M. Kiado	G. Keeler
29	EZR	Dallas, Oregon	K. Dostal	G. Keeler
60	EDX	Green Bay, Wisc.	C. Swanson	G. Webster
66	FAE	Onondaga, New York	L. Townsend	G. Rey
111	EKK	South St. Paul, Minn.	C. Oster	G. Keeler
149	EJD	Hagerstown, Maryland	H. Snyder	C. Ris
206	DJB	Grand Forks, North Dakota	O. Olsen	G. Keeler
223	EOC	Erie, Pennsylvania	G. Webster	G. Webster
246	EGK	Jacksonville, Arkansas	G. Putnicki	G. Rey
197	DBF	Harriman, Tenn.	E. Lomasney	G. Webster
	DUJ	Walton, N.Y.	A. Richardson	G. Keeler
	DPD	Macon, G.A.	E. Lomasney	G. Webster
	DRT	Stockton, Calif.	J. Robertson	G. Keeler
	DRO	Deleware R. Basin Com.	C. Paul	G. Rey

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6,a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Tualatin, Oregon

TITLE OF PROJECT: Tertiary Treatment of Combined Domestic/Industrial Wastes

PROJECT SITE: Tualatin, Oregon

DATE AWARDED: March 20, 1968

FEDERAL GRANT: $230,800

TOTAL EST. PROJ. COST: $323,600

PROJECT NUMBER: WPRD-27-01-67
11060 DLF

PPBS NO. 1106

DESCRIPTION OF PROJECT: A secondary and tertiary sewage treatment plant will be constructed for treatment of combined municipal and industrial wastes. The industrial waste is generated by the manufacture of dog food and will comprise 25% of the BOD load on the treatment plant. The plant will be operated and studied for a period of one year. The tertiary plant (consisting of flocculation, settling and filtration) will be operated with the addition of alum for phosphate removal during the critical 6 months of low stream flow. During the remainder of the year, the secondary effluent will receive plain filtration to maintain a very high quality effluent. The feasibility of alternate methods of chemical sludge disposal and the economics of tertiary treatment with phosphate removal will be studied.

FWPCA PROJECT OFFICER: Michael Kiado

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. NW~~
Washington, D. C. 20242

4/68

HGK

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Dallas, Oregon

TITLE OF PROJECT: Complete Aerobic Treatment of Combined Domestic and Industrial Wastes with Mechanical Aeration

PROJECT SITE: Dallas, Oregon

DATE AWARDED: Dec. 12, 1967

FEDERAL GRANT: $325,104

TOTAL EST. PROJ. COST: $463,472

PROJECT NUMBER: WPRD-29-01-67
11060 EZR

PPBS NO. 1106

DESCRIPTION OF PROJECT: Design and build a treatment plant to demonstrate the economics and efficiency of the completely aerobic treatment method when applied to the treatment of combined domestic and industrial wastes from a small municipality. The industrial waste is generated by fruit canning operations and by plywood glue manufacture and will comprise 75% of the BOD load on the treatment facility. The application of aerobic digestion, mechanical surface aeration, and earthen embankment construction will be demonstrated.

STATUS OF PROJECT: Work ongoing.

PROJECT DIRECTOR: Sidney S. Lasswell, CH_2M, Corvallis, Oregon.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: Green Bay Metropolitan Sewerage District
Green Bay, Wisconsin

TITLE OF PROJECT: "Combined Industrial and Municipal Waste Treatment"

PROJECT SITE: Green Bay, Wisconsin **DATE AWARDED:** December 1966

FEDERAL GRANT: $251,250 **TOTAL EST. PROJ. COST:** $335,000

PROJECT NUMBER: WPRD-60-01-67
11060 EDX
PPBS NO. 1106

DESCRIPTION OF PROJECT: The project will be a study, evaluation, and determination of the effectiveness, design, and operating parameters of four alternative biological treatment processes and modifications for treating combined municipal and industrial (primarily paper mill) waste waters. A pilot waste water treatment plant for each process will be operated in parallel. The effluent quality, operating parameters, design variables, and cost relationships for each process will be determined. Each pilot plant will have a 1 to 10 gpm capacity for combined waste waters. After selecting the most promising process, an existing 60 gpm pilot plant will be modified to suit the selected process and will be operated for a year to demonstrate its performance and to generate performance data. The final objective is to evaluate the design, performance, and use of the systems and to generalize the results for applicability to other locations.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

GW/10-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, (a)(2) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Onondaga County, N.Y.

TITLE OF PROJECT: A Demonstration of Joint Municipal-Industrial Waste Treatment in the Onondaga Lake Watershed

PROJECT SITE: Onondaga County, N.Y.

DATE AWARDED: 8 September, 1967

FEDERAL GRANT: $357,150

TOTAL EST. PROJ. COST: $507,700

PROJECT NUMBER: WPRD-66
11060 FAE

PPBS NO. 1106

DESCRIPTION OF PROJECT:

Onondaga Lake has been a receptor of domestic and industrial wastes to such an extent that it is now in an advanced stage of eutrophication. This project is part of a twenty million dollar program to restore Onondaga Lake.

The objectives of this project are: (1) to demonstrate county-industry cooperative wastewater management of municipal-industrial wastes based on an entire watershed, (2) to demonstrate feasibility of treatment of mixtures of industrial and domestic wastes, (3) to demonstrate the treatment of an industrial waste stream with the waste effluent from another industry, (4) to evaluate the effects of proposed management and treatment methods on the economics of the treatment processes and on the restoration of the lake.

INQUIRIES: **Contact the** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68 GR

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6,a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of South St. Paul, Minnesota

TITLE OF PROJECT: "Efficiency and Economy of Polymeric Sewage Clarification"

PROJECT SITE: South St. Paul, Minn. **DATE AWARDED:** June 15, 1967

FEDERAL GRANT: $450,000 **TOTAL EST. PROJ. COST:** $845,159

PROJECT NUMBER: WPRD 111-01-67 11060 EKK **PPBS NO.** 1106

DESCRIPTION OF PROJECT:

The Demonstration Project includes construction of (1) New Grit Chambers (4 units) two for industrial wastes, one for sanitary sewage and one for either industrial or sanitary wastes. These grit chambers will allow sewage to be treated individually or in combination of the two basic sewages in the treatment process following grit removal; (2) Mechanical flash mix-facilities, laboratory and utility building improvements and the necessary piping and other appurtenant construction. The City will also construct an interceptor sewer, sludge ejector and pumping station in conjunction with the demonstration project but is not a part of this demonstration grant request. The project objectives are to determine the increased purification attainable by treating industrial wastes (packing house), sanitary sewage, combined sanitary sewage, and stormwaters or combinations of such wastes with polyelectrolytes and floc "weighting agents."

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6a(2) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of Hagerstown, Maryland

TITLE OF PROJECT: A Pretreatment Study on Combined Industrial-Municipal Waste Waters.

PROJECT SITE: Hagerstown Sewage Treatment Plant.
Hagerstown, Maryland

DATE AWARDED: March 15, 1968

FEDERAL GRANT: Requested $320,890

TOTAL EST. PROJ. COST: $427,853

PROJECT NUMBER: WPRD 149-01-67
11060 EJD

PPBS NO. 1106

DESCRIPTION OF PROJECT: This project is to evaluate pre-treatment techniques for textile dyeing wastes. The dye wastes are reduced sulfur compounds with a high immediate and ultimate oxygen demand that cannot be satisfied in an activated sludge system. The pre-treatment technique is to provide initial oxidation by diffused aeration, chlorination, and the separate additions of sodium nitrate and potassium permanganate. Ammoniation will also be used. The project will be for two years and include a waste source investigation, detailed baseline analyses, construction of the pre-treatment facilities and full scale paralleling of the treatment system, and evaluation of the pre-treatment techniques.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

HS 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) *Federal Water Pollution Control Act (Clean Water Restoration Act).*

GRANTEE: City of Grand Forks, North Dakota
P.O. Box 1518
Grand Forks, North Dakota

TITLE OF PROJECT: Controlled Treatment of Combined Potato Processing-Municipal Wastes by Anerobic Fermentation, Aerobic Stabilization Process

PROJECT SITE: Grand Forks, N.D.

DATE AWARDED: JUL 17 1968

FEDERAL GRANT: $389,478

TOTAL EST. PROJ. COST: $796,904

PROJECT NUMBER: WPRD-206-01-R1
11060 DJB

PPBS NO. 1106

DESCRIPTION OF PROJECT: A full scale 4.5 mgd demonstration and evaluation of the joint treatment of municipal sewage in conjunction with potato processing wastes using several pretreatment methods prior to final treatment in existing stabilizations ponds. The pretreatment methods include anerobic and aerated treatment, in series, anerobic treatment alone, and aeration alone, under varying seasonal waste load conditions.

In addition to determining the most efficient operation of the pretreatment methods, their effects on the conventional stabilization ponds will be extensively determined.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a (2) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of Erie
Erie, Pennsylvania

TITLE OF PROJECT: "Joint Treatment of Domestic Sewage and Pulp and Paper Mill Industrial Wastes."

PROJECT SITE: Erie, Pa.

DATE AWARDED: JUN 20 1968

FEDERAL GRANT: $88,230

TOTAL EST. PROJ. COST: $333,674

PROJECT NUMBER: WPRD-223-01-68
11060 EOC

PPBS NO. 1106

DESCRIPTION OF PROJECT:

This project is a 20 GPM pilot plant study to determine the feasibility of combining the treatment of normal domestic sewage and the weak wastes from a neutral sulfite semichemical pulp and paper mill.

One of the primary parameters of study will be the possible uptake of sewage neutrients by the treatment with equal volumes of the neutrient deficient pulping wastes. Full economic and design factors will be developed.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~.
Washington, D. C. 20242

GW:5/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: CITY OF JACKSONVILLE, ARKANSAS

TITLE OF PROJECT: "Demonstration of a Facility for the Biological Treatment of Complex Chlorophenolic Wastes.

PROJECT SITE: Jacksonville, Arkansas

DATE AWARDED: May 17, 1968

FEDERAL GRANT: $153,569

TOTAL EST. PROJ. COST: $243,313

PROJECT NUMBER: WPRD 246-01
11060 EGK

FPBS NO. 1106

DESCRIPTION OF PROJECT:

A full scale (2-4 MGD) demonstration and evaluation of the joint treatment of industrial herbicide and municipal wastes, by the use of a municipal biological system composed of: primary clarification, bio-filters, aerated and stabilization ponds. The herbicides are of the chloro and chloro-oxyacetic acid deriviatives of phenol. Investigations will be conducted to determine how the concentration of the phenolics in a receiving stream can be reduced to a level below the tests and odor threshold, also to investigate the biological factors related to the removal of the herbicides during treatment. Suitable methods are to be developed for the identification of the various herbicide compounds. The adequacy of nutrient values in the joint waste to allow complete bio-processing of chlorophenolics and related compounds will also be demostrated

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Indiana Ave. N.W.~~.
Washington, D. C. 20242

8/68

GR

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, (a2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Harriman Utility Board
P. O. Box 434
Harriman, Tennessee 37748

TITLE OF PROJECT: "Treatment of Combined Sewage and Neutral Sulfite Semichemical (NSSC) Pulp and Paper Mill Wastes by High-Rate Biological Filtration and Extended Aeration."

PROJECT SITE: Harriman, Tennessee

DATE AWARDED: Jan. 17, 1969

FEDERAL GRANT: $238,905

TOTAL EST. PROJ. COST: $322,540

PROJECT NUMBER: 11060 DBF

PFBS NO. 1106

DESCRIPTION OF PROJECT:

Project Objectives: To investigate the significant factors affecting the treatment of combined municipal sewage and NSSC pulp and paper mill wastes by high rate biological filtration and extended aeration, separately or in combination, and to establish design criteria, operating parameters and treatment efficiencies.

Grant Duration: two (2) years

INQUIRIES: Contact the Industrial Pollution Control Branch, DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

1/69

GRW

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, (a)(2) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Village of Walton
Village Hall
21 North Street
Walton, N.Y. 13856

TITLE OF PROJECT: "Dynamic Process Development for Biological Treatment of Whey Bearing Wastes"

PROJECT SITE: Walton, New York
Hastings on the Hudson, N.Y.

DATE AWARDED: Feb. 18, 1969

FEDERAL GRANT: $52,730

TOTAL EST. PROJ. COST: $80,047

PROJECT NUMBER: 11060 DUJ

PPBS NO. 1106

DESCRIPTION OF PROJECT:

Efforts of this one year bench and pilot study will be concentrated in resolving problems associated with biological treatment of wastes from the manufacture of cheese and associated dairy products. Frequency response techniques will be employed in the development of activated sludge systems with stable culture separation characteristics. Odor control techniques will be evaluated in packed tower trickling filter studies. A selected process will be employed in an on site pilot plant.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

2/69

HGK

INFORMATION SHEET

Feb. 5, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6, (a 2), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) The City of Macon
City Hall
Macon, Georgia 31201

PROJECT DIRECTOR: (Name and Address) Emory C. Matthews
Executive Secretary
Board of Water Commissioners
780 Third Street - Macon, Georgia 31201

TITLE OF PROJECT: "Pilot study of Treatment of Combined Municipal and Industrial Wastes in Selected primary and biological secondary facilities for the Reduction of Waste Materials Discharged to Receiving Streams."

PROJECT SITE: Macon, Georgia

PROGRAM (PROJECT) NUMBER: 11060 DPD

DATE OFFERED: Feb. 3, 1969

DATE ACCEPTED (AWARDED): Feb. 19, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 2/19/69 Thru: 2/18/70	$ 171,845	$128,883.75

DESCRIPTION OF PROJECT:

Project Objectives: The objective of this study is to develop information relating to the joint treatment of municipal and industrial wastes. The industrial wastes will be selected wastes from both pulp and paper, and wood products companies. The study will be accomplished on a pilot plant basis.

Grant Duration: one year

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GRW 6/19

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, (a)(2) *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: City Council
City of Stockton
Stockton, California

TITLE OF PROJECT: "Upstream Packing House Waste Treatment Demonstration, City of Stockton"

PROJECT SITE: Stockton, California — *DATE AWARDED:* Feb. 25, 1969

FEDERAL GRANT: $381,078 — *TOTAL EST. PROJ. COST:* $1,085,970

PROJECT NUMBER: 1106 -DRT — *PPBS NO.* 1106

DESCRIPTION OF PROJECT: A full scale (2 MGD) development and demonstration of upstream treatment of packinghouse waste by use of aerobic treatment in a combination use of high rate activated sludge and in-sewer treatment. The complex is anticipated to result in the reduction of BOD load to the municipal system of 80 percent and demonstrate the utility value of the conveying sewer line to further treat sewage and to reduce capitol expenditures over a typical activated sludge plant otherwise required. It is intended to consider the use of the Kehr process for partial upstream treatment during pilot studies.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~800 Indiana Ave. N.W.~~
Washington, D. C. 20242

2/69

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Delaware River Basin Commission
25 Scotch Road - P.O. Box 360
Trenton, New Jersey 08603

TITLE OF PROJECT: Deepwater - Pilot Plant - Engineering and Interceptor Feasibility Study

PROJECT SITE: Salem County, N. J.

DATE AWARDED: April 1, 1969

FEDERAL GRANT: $646,700

TOTAL EST. PROJ. COST: $995,650

PROJECT NUMBER: 11060 DR0

PPBS NO. 1106

DESCRIPTION OF PROJECT: A pilot plant and engineering study to develop a chemical-biological treatment process for joint industrial-municipal wastes, capable of attaining at least 88 to 93 percent removal of major pollutants. Design, operating and cost information is to be obtained for a 80 MGD regional treatment complex. To test and evaluate Advanced Waste Treatment processes for final effluent polishing. To develop suitable cost apportionment formulations for the treatment of various industrial wastes by a joint regional complex operated by an Interstate Agency. To develop and demonstrate the requirements for organizing, operating and administering a regional facility by an Interstate Agency.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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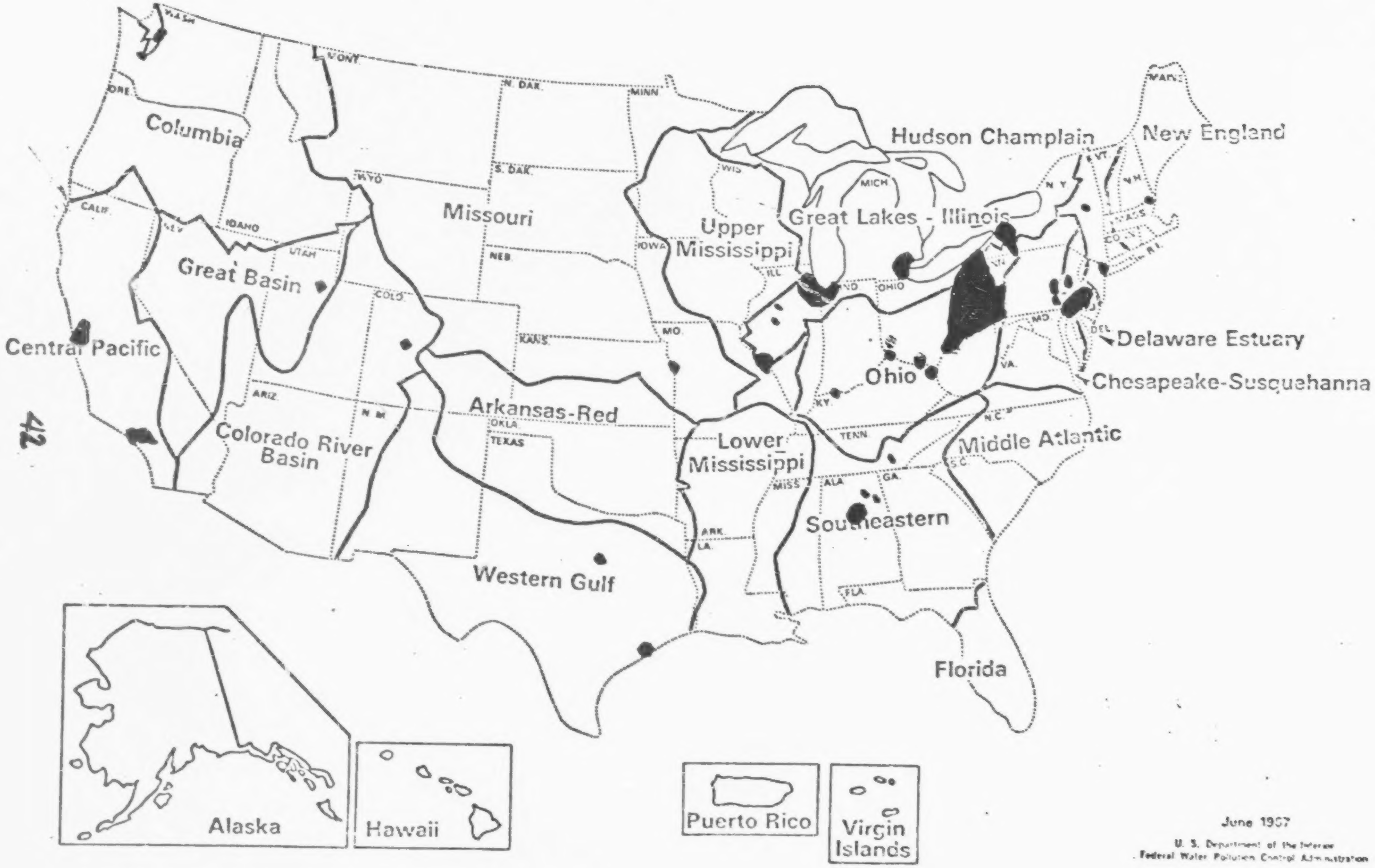
PPB 1201

METAL & METAL PRODUCTS

WP	12010 Letters	To	GPO	PM
1343-01	DOT	U. of Waterloo-Byerley	C. Risley	E. Dulaney
	DIM	U. of Utah-Miller	J. Rouse	E. Dulaney
1472-01	DHP	Clarkson College of Tech.-Jellinek	C. Risley	E. Dulaney
WPRD				
41		Chem. Separations Corp.	J. Fisher	W. Lacy
168	DUL	Armco Steel Corp.	R. Feder	E. Dulaney
169	EZV	Armco Steel Corp.	R. Feder	E. Dulaney
201	EIE	Metal Finishers Foundation	J. Ciancia	E. Dulaney
222	DSA	S.K. Williams Co.	C. Risley	E. Dulaney
237	DPF	Volco Brass & Copper	J. Ciancia	E. Dulaney
244	DMF	The Beaton & Corbin Co.	J. Ciancia	E. Dulaney
270	DFS	RAI Research Corp.	L. Kahn	E. Dulaney
208	DRE	Interlake Steel Corp.	C. Risley	E. Dulaney
	DNF	CF&I Steel Corp.	F. Pfeffer	E. Dulaney
	DRH	Minnesota Pollution Control Agency	C. Risley	E. Dulaney
	EDY	Am. Iron & Steel Inst.	F. Pfeffer	E. Dulaney
	DTQ	Weirton Steel	W. West	E. Dulaney
	EQF	Alabama Water Improvement Commission	E. Lomasney	E. Dulaney

LOCATION OF MAJOR BLAST FURNACES & STEEL MILLS
PPB 1201: Metals & Metal Products


Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Ohio
Delaware Estuary
Chesapeake-Susquehanna
Middle Atlantic
Southeastern
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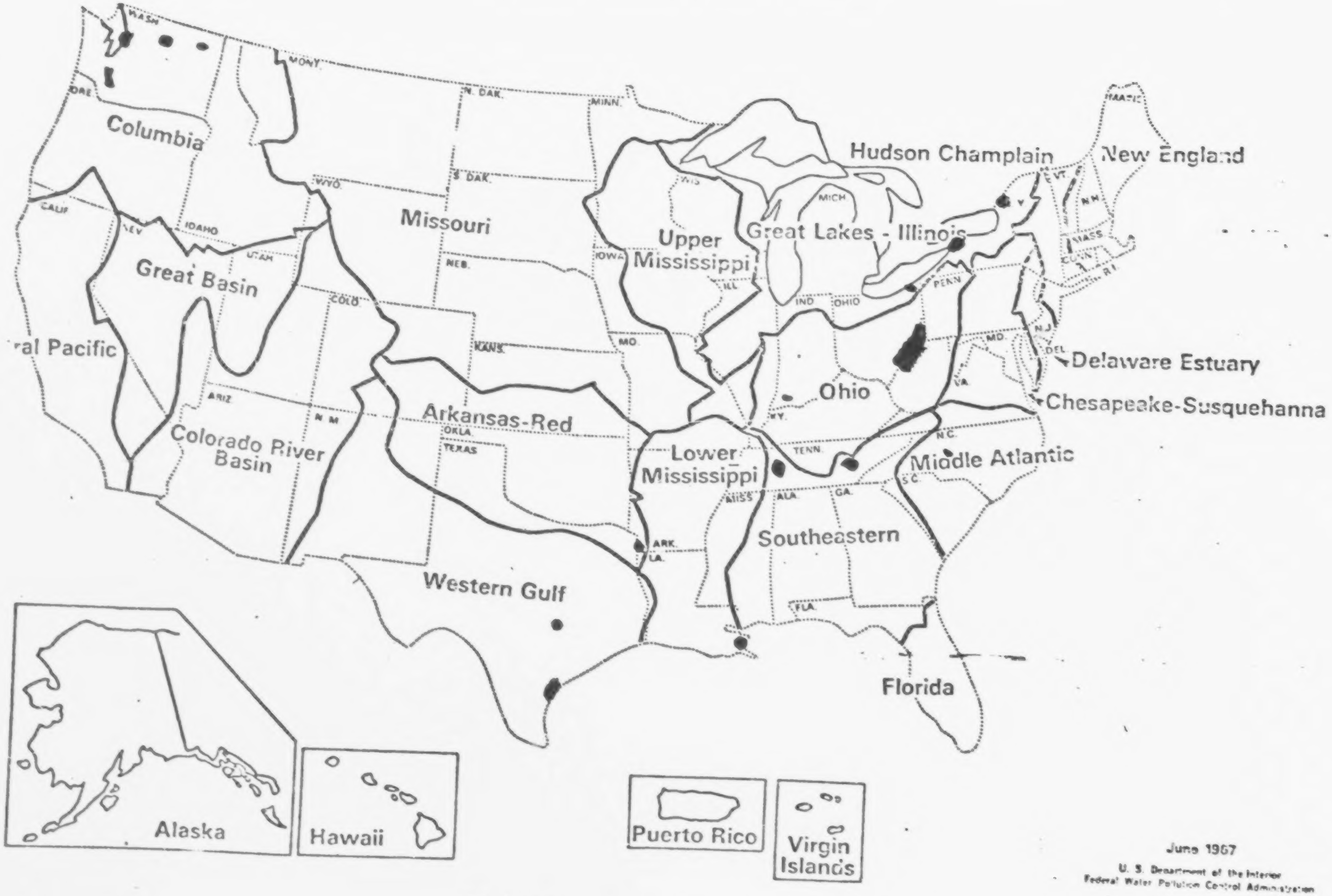
MAINE
Alaska
Hawaii
Puerto Rico
Virgin Islands

June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

LOCATION OF PRIMARY ALUMINUM & ELECTROMETALLURGICAL PRODUCT PLANTS
PPB 1201: Metals & Metal Products


WASH
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IDAHO
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NEB.
IOWA
WIS
Upper Mississippi
Great Lakes - Illinois
MICH
Hudson Champlain
New England
MAINE
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COLO
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MO.
Central Pacific
ARIZ
N.M.
OKLA.
TEXAS
Colorado River Basin
Arkansas-Red
KY.
Ohio
MD.
DEL
VA.
Delaware Estuary
Chesapeake-Susquehanna
Lower Mississippi
TENN.
N.C.
Middle Atlantic
S.C.
MISS
ALA.
GA.
Southeastern
ARK.
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Western Gulf
FLA.
Florida
Alaska
Hawaii
Puerto Rico
Virgin Islands

June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

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INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Research, *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: University of Waterloo
Dr. John J. Byerley

TITLE OF PROJECT: Detoxication of Cyanide Wastes by Electrooxidation

PROJECT SITE: Waterloo, Ontario

DATE AWARDED: November 26, 1968

FEDERAL GRANT: $12,429

TOTAL EST. PROJ. COST: $24,047

PROJECT NUMBER: WP-1343-01
1201 DOT

PPBS NO. 1201

DESCRIPTION OF PROJECT: The objective of this project is to develop an economical in-plant electrooxidation process for destroying cyanide ion in dilute cyanide wastes. This process is to be:

a) Capable of purifying large volumes of cyanide wastes by reducing cyanide ion concentration to less than 1 ppm.

b) Suited to operation by semi-skilled personnel in small scale operations.

c) Adaptable to continuous or semi-continuous operation.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Research Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Utah
Salt Lake City, Utah
Dr. Jan D. Miller

TITLE OF PROJECT: Depression of Pyrite in Sulfide Flotation Systems Without the use of Cyanide

PROJECT SITE: Salt Lake City, Utah

DATE AWARDED: January 29, 1969

FEDERAL GRANT: $12,663.00

TOTAL EST. PROJ. COST: $13,559.00

PROJECT NUMBER: 12010 DIM

PPBS NO. 1201

Date Effective: January 1, 1969

DESCRIPTION OF PROJECT:

The objective of this project is to develop a technique for the depression of pyrites in the froth flotation of sulfide ores by the addition of organic salts in place of commonly used cyanides. The oxidation potential of pure systems will be varied to determine explicitly the conditions which must be imposed to depress pyrites. Batch flotation tests on two natural sulfide ores containing pyrite will then be conducted to determine the feasibility of pyrite depression in a natural system under conditions prescribed for the pure system.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

RN 11/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, (Research) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Clarkson College of Technology
Potsdam, New York 13676
Dr. H.H.G. Jellinek

TITLE OF PROJECT: Metal Removal/Recovery from Polluted Water by Complexation with Linear Polyelectrolytes

PROJECT SITE: Potsdam, New York

DATE AWARDED: February 13, 1969

FEDERAL GRANT: $24,328.00

TOTAL EST. PROJ. COST: $27,645.00

PROJECT NUMBER: 12010 DHP

PPBS NO. 1201

DESCRIPTION OF PROJECT:

Project Period: March 1, 1969-Feb. 28,197

The complexation of metal ions with polyacids to form water soluble complexes and subsequent precipitation with polybases will be investigated. Metals are to be recovered by destroying the complex at low pH. Reuse of the polyelectrolyte will be investigated. The objective of the project will be to demonstrate that the above described technique is an economically and technically feasible method of treating wastewaters containing widely varying metal concentrations.

This grant is for the first year of grantee's anticipated three year project.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD/12/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Chemical Separations Corporation
Bus Terminal Road
Oak Ridge, Tennessee 37830

TITLE OF PROJECT: Acid Pickle Liquor Wastes Treatment Utilizing Advanced Ion Exchange Techniques

PROJECT SITE: Oak Ridge, Tennessee

DATE AWARDED: December 20, 1967

FEDERAL GRANT: $50,400.00

TOTAL EST. PROJ. COST: $72,000.00

PROJECT NUMBER: WPRD 41(R1)-01-68

PPBS NO. 1201

DESCRIPTION OF PROJECT:

The purpose of this grant is to determine the feasibility of using continuous ion exchange to strip Fe from pickling wastes and regenerate the acid for reuse. The iron will be converted to a high grade Fe_2O_3 for use in metallurgical processing as by-product.

Project Period: 15 months

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

ELD 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6b, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Armco Steel Corporation
Middletown, Ohio

TITLE OF PROJECT: "Treatment of Acid Rinse Waters"

PROJECT SITE: Middletown, Ohio

DATE AWARDED: May 16, 1968

FEDERAL GRANT: $547,500

TOTAL EST. PROJ. COST: $1,784,800

PROJECT NUMBER: WPRD 168-01-68
12010 DUL

PPBS NO. 1201

PROJECT PERIOD: Nov. 1, 1967 to
Oct. 31, 1969

DESCRIPTION OF PROJECT:

The project provides for construction, operation, tests, and reports on facilities to treat 1500 gpm of acid rinse waters produced by the hydrochloric acid pickling of strip-steel preparatory to cold-rolling. The treatment process will consist of limestone neutralization, aeration, coagulation, sedimentation, sludge recirculation, vacuum filtration of the excess sludge, and effluent equalization.

All or nearly all of the acid and the compounds of iron will be removed by the treatment process. The chloride content of the waste is not changed by this process and may be such that dilution with other available wastes will be required in order to meet the state's proposed standards regarding total dissolved solids.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Armco Steel Corporation
Middletown, Ohio

TITLE OF PROJECT: Treatment of Waste Water - Waste Oil Mixtures

PROJECT SITE: Ashland, Kentucky

DATE AWARDED: May 16, 1968

FEDERAL GRANT: $209,000

TOTAL EST. PROJ. COST: $1,541,720

PROJECT NUMBER: WPRD 169-01-68
12010 EZV

PPBS NO. 1201

PROJECT PERIOD: Nov. 1, 1967 to Oct. 31,1969

DESCRIPTION OF PROJECT:

This project provides for design, operation, studies, and reports on a full scale demonstration facility to be built by Armco for the treatment of 4.6 mgd of oil-water emulsion wastes from a five-stand cold-rolling mill. A five chemical treatment method of coagulation, flocculation, dissolved air flotation for oil-water separation, and sludge incineration will be used. The project schedule provides one year for construction and one year for operating studies of parameters and reporting of results.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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ELD/Feb 68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Metal Finishers' Foundation
Upper Montclair, New Jersey

TITLE OF PROJECT: "An Investigation of Techniques for the Removal of Chromium and Cyanides from Electroplating Wastes."

PROJECT SITE: Upper Montclair, N.J.
DATE AWARDED March 27, 1968

FEDERAL GRANT: $98,000
TOTAL EST. PROJ. COST: $145,000

PROJECT NUMBER: WPRD 201-01-68
12010 EIE
PPBS NO. 1201
DURATION: 2 years

PROJECT PERIOD: March 1, 1968
to April 30, 1970

DESCRIPTION OF PROJECT:

The Metal Finishers' Foundation will conduct a two-phase research and demonstration project on methods for economically treating cyanide and chromium wastes from small plating shops. Phase I will include (a) a "State of the Art" review of recovery techniques, (b) accumulation of data on waste stream compositions, (c) selection of techniques for bench scale study and selection of extractants and complexing agents, (d) bench scale experimental investigation of selected techniques and (e) evaluation of the test results and preparation of recommendations. This phase will require one year.

Phase II will consist of (a) the design of theprocess and the processing equipment, (b) acquisition and installation of the equipment in an electroplating plant, (c) operation of the demonstration plant to accumulate data, and (d) the evaluation of the data and preparation of reports.

The work will be performed by subcontract to the Battelle Memorial Institute at Columbus, Ohio. Various treatment methods; including liquid-liquid extraction, ion flotation, and precipitate flotation; will be investigated and compared.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

BLD:2/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: **S. K. Williams Company**
2370 N 32nd Street
Milwaukee, Wisconsin 53210

TITLE OF PROJECT: **"Electroplating Waste Treatment and Water Reuse"**

PROJECT SITE: **Milwaukee, Wisconsin** *DATE AWARDED:* July 17, 1968

FEDERAL GRANT: $87,750 *TOTAL EST. PROJ. COST:* $157,306.80

PROJECT NUMBER: WPRD222-01-R1-68 *PPBS NO.* 1201
12010 DSA

PROJECT PERIOD: Jul. 17, 1968 to Mar. 17,1970

DESCRIPTION OF PROJECT: **The S. K. Williams Company proposes to install a chemical pre-rinse type waste treatment plant (designed by Lancy Laboratories) to treat the drag-out from various operations in their new job-plating plant. Each section of the waste treatment facility will be expected to alternately or simultaneously treat the wastes from three to seven different processing operations. Sludges will be disposed of by landfill and 80-90% of the rinse waters will be reused. The blowdown rinse waters will be free of significant quantities of toxic substances.**

The project period will be 8 months for construction and 12 months for operation, maintenance, and post construction studies and reports.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave., N.W.~~
Washington, D. C. 20242

ELD/6-68

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b) *Federal Water Pollution Control Act (Clean Water Restoration Act).*

GRANTEE: Volco Brass and Copper Company
Kenilworth, New Jersey 07033

TITLE OF PROJECT: "Treatment Recovery, and Reuse of Copper Wire Mill Pickling Wastes."

PROJECT SITE: Kenilworth, N. J.

DATE AWARDED: June 28, 1968

FEDERAL GRANT: $124,000

TOTAL EST. PROJ. COST: $177,159

PROJECT NUMBER: WPRD 237-01-68
12010 DPF

PPBS NO. 1201

PROJECT PERIOD: June 28, 1968 to July 10, 1969

DESCRIPTION OF PROJECT: Volco Brass and Copper Company produces 75 TPD of copper and copper alloy wire. Wastes from the pickling, bright dipping, and drawing operations consist of spent treating solution dumps, drag-out, and rise waters containing acids; alkalies; and hexavalent chromium, copper, fluoride, and copper complexing ammonium ions. Lancy Laboratories has designed a process and waste treatment system which will recover the copper electrolytically, will regenerate the treating solutions, and will permit reuse of 95+% of the waste water as process water. The process is free of any significant sludge disposal problem. The project is to be completed in one year.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~.
Washington, D. C. 20242

ELD 3/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: The Beaton and Corbin Mfg. Co.
Southington, Connecticut

TITLE OF PROJECT: Chemical Treatment of Plating Waste for Elimination of Chromium, Nickel and Metal Ions

PROJECT SITE: Southington, Conn.

DATE AWARDED: June 3, 1968

FEDERAL GRANT: $37,250

TOTAL EST. PROJ. COST: $58,220

PROJECT NUMBER: WPRD 244-01-68
12010 DMF

PPBS NO. 1201

DESCRIPTION OF PROJECT: This is an industrial waste treatment project for the installation and demonstration of a chemical pre-rinse system for the removal of toxic materials from the wastes from a small electroplating plant. The treated effluent is expected to have a pH of 6.5 to 8.5 and will contain less than: 0.1 ppm of chromium, copper, nickel, or zinc; 100 ppm of chlorides or nitrates; 200 ppm of sulfates; 5 ppm of BOD; and will be color and odor free. Approximately two-thirds of the treated effluent will be reused for plating rinse water.

Precipitates of toxic metal ions will be produced by the chemical treatment of the segregated waste streams from the various plating lines. Sludges containing these precipitates will be routed to sludge drying beds. Dried sludges will be disposed of by landfill.

There are over three thousand similar sources of stream pollution in the New England area alone and over twelve thousand plating plants across the nation. This project will provide technical and economic data on an effective waste treatment method. It is anticipated that this information will be of value to many firms, who because of insufficient funds, could not themselves undertake the engineering and development costs required.

PROJECT PERIOD: June 3, 1968 to February 3, 1970

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD 4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: RAI Research Corp.
36-40 37th Street
Long Island City, N.Y. 11101

TITLE OF PROJECT: "Treatment of Cyanide Rinse Waters by Electrodialysis"

PROJECT SITE: Long Island City, N.Y **DATE AWARDED:** Nov. 11, 1968

FEDERAL GRANT: $58,685 **TOTAL EST. PROJ. COST:** $83,835

PROJECT NUMBER: WPRD-270-01-68
12010 DFS **PPBS NO.** 1201

PROJECT PERIOD: Nov. 11, 1968-Jul. 11, 1969

DESCRIPTION OF PROJECT: This project provides for a laboratory study of the application of electrodialysis to the treatment of a cyanide solution which simulates the rinse water from a copper "strike" electroplating operation. The objective is to develop design parameters and to define economic factors as a basis for a later demonstration program with an industrial plating firm. The project period will be eight months.

INQUIRIES: **Contact the** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

ELD/6-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Interlake Steel Corporation
310 South Michigan Avenue
Chicago, Illinois 60604

TITLE OF PROJECT: Pollution Control of Blast Furnace Gas Washer Through Recirculation

PROJECT SITE: Chicago, Illinois

DATE AWARDED: January 27, 1969

FEDERAL GRANT: $175,200.

TOTAL EST. PROJ. COST: $525,600.

PROJECT NUMBER: WPRD 208-01-68
12010 DRE

PPBS NO. 1201

DESCRIPTION OF PROJECT: The full scale demonstration project will provide additional facilities for the treatment and reuse of 7.2 mgd of blast furnace gas washer water from the venturies and coolers on two blast furnaces. The water before treatment contains 700 ppm of suspended solids, 1630 ppm of total solids, 3ppm cyanides, and 100 ppb of phenols. An anionic polyelectrolyte will be used to improve recovery of magnetite (Fe3^{04}) and removal of cyanides in the primary clarifier. In addition, polyphosphates and chlorine will be used as required to prevent a hydrogen cyanide hazard in the vacinity of the cooling tower. A new cooling tower will reduce the water temperature and further reduce cyanides thus permitting reuse of most of the water. The cooling tower blowdown will be used to cool slag. The blowdown stream will be evaporated and leave its dissolved solids on the slag pile. The blowdown rate will be determined by the allowable alkalinity of the recirculated water. The water is passed through cooling coils in the walls of the blast furnaces before routing through the venturies. This is expected to limit the alkalinity to 500 ppm.

The project period of 18 months is based on anticipated completion of construction in July 1969 and Final Report by August 1, 1970.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Indiana Ave. N.W.~~.
Washington, D. C. 20242

ELD 11/68

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: CF&I Steel Corporation
P. O. Box 1920
Denver, Colorado 80201

TITLE OF PROJECT: Research Study of Coal Preparation Plant and By Product Coke Plant Effluents

PROJECT SITE: Pueblo, Colorado

DATE AWARDED: MAR 27 1969

FEDERAL GRANT: $86,500.00

TOTAL EST. PROJ. COST: $205,000.00

PROJECT NUMBER: 12010 DNF

PPBS NO. 1201

DESCRIPTION OF PROJECT:

This project will provide for (a) a study of waste sources, volumnes, and characteristics, (b) laboratory and bench scale studies of alternate treatment processes, and (c) a study of additions to planned coal washery filtration facilities to develop reuse possibilities of non-coking solids and solids waste disposal. Development of methods for waste water treatment to produce effluents suitable for reuse or discharge in accordance with state stream standards will be a major objective.

The project period is seven months.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD 2/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Minnesota Pollution Control Agency
717 Delaware Street, Southeast
Minneapolis, Minnesota 55440

TITLE OF PROJECT: "Study of Reverse Osmosis for Treating Metal Finishing Effluents"

PROJECT SITE: Minneapolis, Minnesota *DATE AWARDED:* June 30, 1969

FEDERAL GRANT: $49,737.00 *TOTAL EST. PROJ. COST:* $71,053.00

PROJECT NUMBER: 12010 DRH *PPBS NO.* 1201

DESCRIPTION OF PROJECT: The Minnesota Pollution Control Agency proposes to engage the North Star Research and Development Institute (3100 Thirty Eighth Ave., So., Minneapolis, Minnesota, 55406) to conduct Phase I of an anticipated three phase - three year project. The objectives of the project are to develop reverse osmosis (RO) for the treatment of metal finishing effluents (MFE) for the purposes of (a) eliminating pollutants from effluents, (b) recovery of valuable plating materials, and (c) recovery of waste waters for reuse.

Phase I will provide for screening of candidate membranes for effectiveness and compatibility in single ion applications, compatibility of support materials, investigation of promising membranes for improvement by modification, and investigation of operating parameters, e.g. temperature, pressure, thickness, strength, and permeability.

Phase II would extend the studies to mixed ion MFE's, life studies, and production aspects and costs of membranes.

Phase III would consist of scale-up studies on simulated MFE's and subsequently to actual MFE's with generation of data for commercialization.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

ELD 4/68

INFORMATION SHEET

May 27, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
American Iron & Steel Institute
150 East 42nd Street
New York, New York 10017

PROJECT DIRECTOR: (Name and Address)
John E. Barker
Manager, Pollution Control
Armco Steel Corporation
Middletown, Ohio 45042

TITLE OF PROJECT: "Biological Removal of Carbon and Nitrogen Compounds from Coke Plant Wastes"

PROJECT SITE: Houston, Texas

PROGRAM (PROJECT) NUMBER: 12010 EDY

DATE OFFERED: May 21, 1969

DATE ACCEPTED (AWARDED): June 25, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/25/69	$156,000	$109,200
Thru: 9/24/70		

DESCRIPTION OF PROJECT:

The Armco Steel Corporation, under the sponsorship of the AISI and with the assistance of the AISI Fellowship at Mellon Institute will design, construct, operate, optimize, and evaluate a 1 gpm pilot facility for the three stage biological treatment of raw ammoniacal liquors from the by-product coke plant of Armco Steel located at Houston, Texas. A typical analysis of this waste would indicate 1240 ppm of phenol, 60 ppm cyanide, and 6400 ppm ammonia. The three stage biological treatment system is designed to accomplish (a) oxidation of carbonaceous material (aerobic), (b) nitrification of nitrogenons compounds (aerobic) and (c) nitrate reduction to nitrogen gas (anaerobic). Laboratory testing indicates that removal of 75% of organic carbon, 99% of phenol and cyanide and essentially all of the ammonia can be expected. The pilot facility will provide the basis for the design of a full scale facility.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD 5/69

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant , under Section 6(b) , Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR ~~CONTRACTOR~~; (Name and Address)
Weirton Steel Division
National Steel Corporation
Box 431
Weirton, West Virginia 26062

PROJECT DIRECTOR: (Name and Address)
William M. Smith
Manager, Industrial Hygiene Engineering
Weirton Steel Division

TITLE OF PROJECT: Combined Steel Mill and Municipal Wastewaters Treatment

PROJECT SITE: Weirton, West Virginia

PROGRAM (PROJECT) NUMBER: 12010 DTQ

DATE OFFERED: July 14, 1969

DATE ACCEPTED (AWARDED): July 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/30/69 Thru: 7/29/70	$ 163,963	$ 95918

DESCRIPTION OF PROJECT:

This grant supports Phase I of grantee's anticipated three phase project to provide an overall waste treatment system to treat effluents from an integrated steel mill and the domestic wastes from the City of Weirton, West Va. The mill produces the full spectrum of steel industry wastes. Waste water volumes currently are 226 mgd and 1.2 mgd from the mill and the city respectively. The general approach will be to reduce volumes by providing treatment to maximize reuse, to provide pretreatment as required for subsequent combined treatment, to provide combined treatment of sanitary and specific mill wastes where a synergestic effect can be anticipated, in an expanded municipal facility, and to provide complete treatment of the remaining wastes.

Phase I consists of three tasks which include wastewater characterization and analysis of existing facilities, accessment of alternative treatment processes, and determination of the feasibility of a joint municipal-industrial waste treatment demonstration facility. Phase I will require twelve months to complete.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD6/69

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V, under Section 6(b) of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama 36104

PROJECT DIRECTOR: (Name and Address)
R.E. Lacey, Head, Membrane Processes Section
Southern Research Institute
Birmingham, Alabama 35205

TITLE OF PROJECT: Electromembrane Process for Regenerating Acid from Spent Pickle Liquor

PROJECT SITE: Birmingham, Alabama

PROGRAM (PROJECT) NUMBER: 12010 EQF

DATE OFFERED: August 14, 1969

DATE ACCEPTED (AWARDED): Sept. 9, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: One Year Thru:	$30,000	$ 20,000

DESCRIPTION OF PROJECT:

This project provides for the experimental investigation of an electromembrane process for the recovery of sulfuric acid and iron or iron oxide from spent sulfuric acid pickling liquors. The investigation will determine the technical feasibility of the process in a bench scale operation, provide engineering data for the design of larger recovery units, and develop engineering cost estimates to indicate the economic feasibility of the process. The bench scale studies will be directed at development of the configuration, mode, and conditions of operation required to minimize power requirements.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD 8/69

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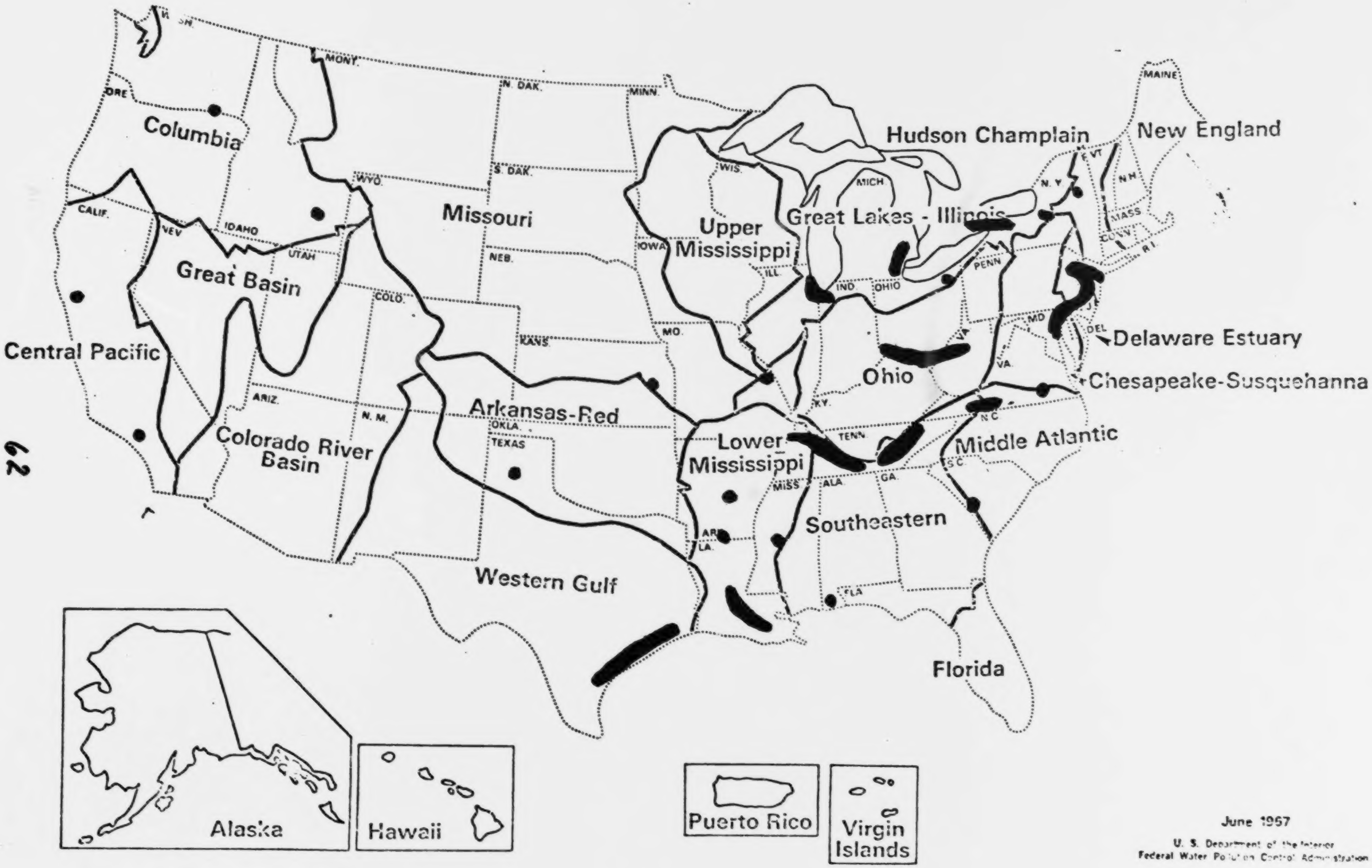
PPB 1202

CHEMICALS & ALLIED PRODUCTS

12020 Letters	To	GPO	PM
DJI	B. F. Goodrich Chem. Co.	G. Horowitz	G. Rey
DIS	Union Carbide Corp.	J. Horn	G. Rey
DQC	Dept. Commerce & Industry State of Louisiana	J. Horn	G. Rey
EEQ	Dow Chemical Co.	J. Horn	G. Rey
EAW	E. I. DuPont	J. Ulshoefer	G. Rey
EAS	Dow Chemical Co.	C. Risley	G. Rey
EGM	Farmers Chemical Co.	E. Lomasney	G. Rey
EFW	Armour Industrial Chemical Company	C. Risley	G. Rey
EGC	Alabama Geological Survey & Oil and Gas Bd.	E. Lomasney	G. Rey
ERM	Mineral Pigments Corp.	S. Griggs	G. Rey

Contracts			
14-12-435	C. W. Rice & Co.	F. Stein	G. Rey
EID	Engineering Science, Inc.	G. Putnicki	G. Rey

LOCATION OF MAJOR INORGANIC CHEMICAL INDUSTRIES
PPB 1202: Chemical & Allied Products


Columbia
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Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Ohio
Middle Atlantic
Southeastern
Florida
Alaska
Hawaii
Puerto Rico
Virgin Islands
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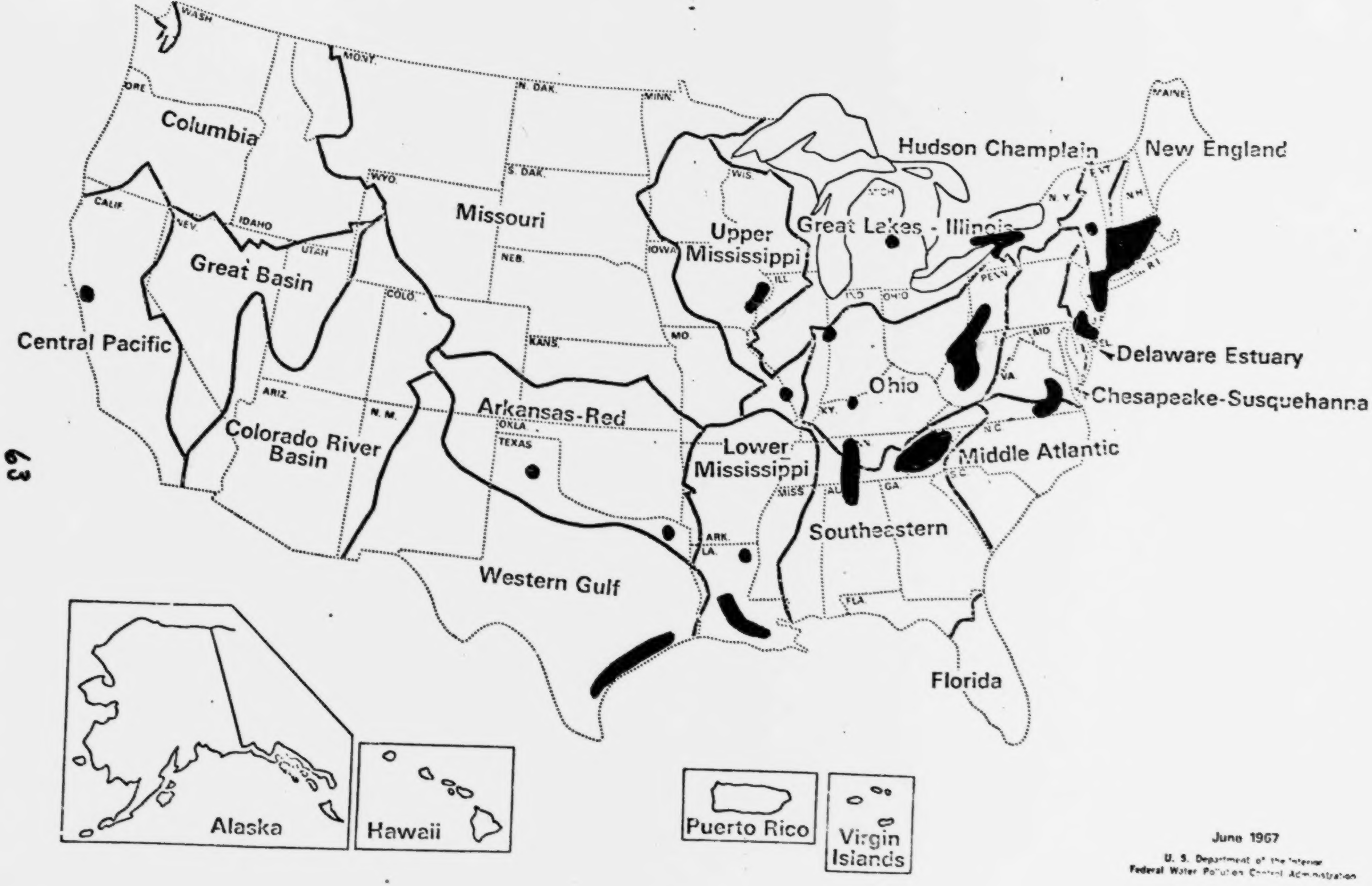
June 1957

U. S. Department of the Interior
Federal Water Pollution Control Administration

LOCATION OF MAJOR ORGANIC CHEMICAL INDUSTRIES
PPB 1202: Chemical & Allied Products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N.H.
MAINE
R.I.
Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Ohio
Southeastern
Florida
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Middle Atlantic
Alaska
Hawaii
Puerto Rico
Virgin Islands

June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: B. F. Goodrich Chemical Company
3135 Euclid Avenue
Cleveland, Ohio 44115

TITLE OF PROJECT: Waste Treatment Facilities for Poly Vinyl Chloride Manufacturing Plant

PROJECT SITE: Salem County, N. J. **DATE AWARDED:** JUL 2 1968

FEDERAL GRANT: $364,900 **TOTAL EST. PROJ. COST:** $823,100

PROJECT NUMBER: WPRD 248-01-68
12020 DJI **PPBS NO.** 1202

DESCRIPTION OF PROJECT: A development, demonstration, and evaluation project for the bio-chemical treatment of wastewaters from a typical poly vinyl chloride manufacturing plant, at a 0.85 mgd scale of operation.

The treatment system is to produce effluent to meet the receiving water standards (Delaware River) of greater than 85% removal of BOD, turbidity of not greater than 30 units above river water, and be free from taste and odor producing substances.

The process will consist of chemical pre-treatment with primary sedimentation, followed by activated sludge secondary treatment and a final polishing pond. Tertiary treatment studies with activated carbon are also contemplated to determine the extent to which the secondary effluent will lend itself to tertiary treatment, as future Delaware River standards may require the equivalent of tertiary treatment.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Union Carbide Corp.
R&D Department
Bound Brook, New Jersey 08805

TITLE OF PROJECT: Anaerobic Treatment of Synthetic Organic Wastes

PROJECT SITE: South Charleston, W.Va. **DATE AWARDED:** December 11, 1968

FEDERAL GRANT: $220,400 **TOTAL EST. PROJ. COST:** $314,859

PROJECT NUMBER: 1202-DIS **PPBS NO.** 1202

DESCRIPTION OF PROJECT: To determine the technical and economic feasibility of an anaerobic-aerobic process for the treatment of composit organic chemical wastes from a complete petrochemical complex. Optimum results will be demonstrated on a 5000 gpd scale treatment facility to obtain design data and establish operating criteria for larger scale installations. The demonstration will be conducted subject to a technical an economic feasibility study based on laboratory scale research studies. The project will be for a two year period and will be initiated at the Union Carbide Technical Center at South Charleston, West Virginia.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Department of Commerce and Industry
State of Louisiana

TITLE OF PROJECT: Evaluation of Polymeric Materials for the Treatment and Recovery of Petrochemical Wastes.

PROJECT SITE: Baton Rouge, La.

DATE AWARDED: April 16, 1969

FEDERAL GRANT: $48,295

TOTAL EST. PROJ. COST: $68,992

PROJECT NUMBER: 12020 - DQC

PPBS NO. 1202

DESCRIPTION OF PROJECT:

Evaluation, of recently developed reverse osmosis membranes for application to in-plant chemical waste streams, under laboratory and field conditions. Various selected membranes and petrochemical in-plant waste streams will be examined in a high velocity test circuit to obtain engineering and economic data, to provide guidelines for the application of reverse osmosis to various selected in-plant waste streams to reduce net organic loads by recovering their product values.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

May 28, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
The Dow Chemical Company
Texas Division
Freeport, Texas

PROJECT DIRECTOR: (Name and Address)
Mr. W. F. McIlheny
Contract Research Dept.
The Dow Chemical Company
Freeport, Texas 77541

TITLE OF PROJECT: "Treatment of Waste Waters Resulting from the Production of Polyhydric Organic Compounds"

PROJECT SITE: Freeport, Texas

PROGRAM (PROJECT) NUMBER: 12020 EBQ

DATE OFFERED: May 23, 1969

DATE ACCEPTED (AWARDED): June 5, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/5/69 Thru: 6/4/71	$282,490	$197,740

DESCRIPTION OF PROJECT: To develop a method of treatment of wastes from polyhydric manufacturing processes. Several alternative treatment methods will be examined to determine their technical, engineering, and economic feasibility. The results will be used to develop a conceptual design of a waste treatment facility for the briny wastes resulting from this chemical industry. Processes to be evaluated are aerobic biological systems, solvent extraction, foam fractionation, dialysis, and adsorption. Studies will include laboratory, bench scale, and pilot plant scale testing.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

June 19, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b) of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
E. I. du Pont de Nemours and Company
Pigments Department
Wilmington, Delaware 19898

PROJECT DIRECTOR: (Name and Address)
Dr. Lloyd L. Falk
Senior Consultant
E. I. du Pont de Nemours and Company, Engineering Dept.
Wilmington, Delaware 19898

TITLE OF PROJECT: "Ocena Disposal of Industrial Wastes"

PROJECT SITE: Wilmington, Delaware

PROGRAM (PROJECT) NUMBER: 12020 EAW

DATE OFFERED: June 16, 1969

DATE ACCEPTED (AWARDED): June 24, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: July '69 Thru: April '70	$ 874,452	$ 150,116

DESCRIPTION OF PROJECT:

To evaluate the various technical and economic aspects of the dispersal of an acid-iron industrial waste at sea, over the continental shelf of the Atlantic off the coast of Delaware.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GR/6/69

INFORMATION SHEET

June 17, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
The Dow Chemical Company
1000 Main Street
Midland, Michigan 48640

PROJECT DIRECTOR: (Name and Address)
Frank Brower
Director, Hydrocarbons and Monomers Laboratory
1000 Main Street
Midland, Michigan 48640

TITLE OF PROJECT: Demonstration of the Recondition and Reuse of Organically Contaminated Brines from Chemical Process Industries

PROJECT SITE: Midland, Michigan

PROGRAM (PROJECT) NUMBER:
12020 EAS

DATE OFFERED: June 16, 1969

DATE ACCEPTED (AWARDED): June 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/30/69 Thru: 6/29/71	$1,300,408	$509,810

DESCRIPTION OF PROJECT:

Develop and demonstrate a chemical-adsorption process for wastewaters from a phenol manufacturing plant. The process will treat the wastewaters for the removal and recovery of phenol and acetate and the remaining brine wastewater will be utilized for caustic-chlorine production. The basic process involves the selective separation of organic constituents by activated carbon beds. Beds will be regenerated by chemical means.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

6/18/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Farmers Chemical Association, Inc.
Box 87
Harrison, Tennessee

PROJECT DIRECTOR: (Name and Address)
Edward C. Bingham
Tech. Asst. to Gen. Mgr.
Farmers Chemical Association, Inc.
Harrison, Tennessee 37341

TITLE OF PROJECT: "Removal of Nitrogenous Compounds from a Fertilizer Plant Effluent Using Modified Operation of Conventional Waste Treatment Systems"

PROJECT SITE: Tyner, Tennessee

PROGRAM (PROJECT) NUMBER: 12020 EGM

DATE OFFERED: June 13, 1969

DATE ACCEPTED (AWARDED): June 27, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/69 Thru: 6/71	$220,300	$154,210

DESCRIPTION OF PROJECT: A full scale development and demonstration of the treatment of nitrogenous fertilizer effluents using stripping or oxidation pretreatment techniques, followed by bio-nitrification in a conventional trickling filter sewage treatment plant as modified for the purpose of providing optimized removal of nitrogenous materials in the waste.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GR 5/69

INFORMATION SHEET

September 8, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a ______________, under Section 6(b) ______________, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Armour Industrial Chemical Company
Chicago, Illinois 60611

PROJECT DIRECTOR: (Name and Address)
E. F. Harp
Director Engineering
8201 West 47th Street
McCook, Ill 60525

TITLE OF PROJECT: Armour Industrial Chemical Company Secondary Wastewater Treatment

PROJECT SITE: McCook, Illinois

PROGRAM (PROJECT) NUMBER: 12020 EFW

DATE OFFERED: August 26, 1969

DATE ACCEPTED (AWARDED): Oct. 6, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 4/25/69 Thru: 1/24/72	$503,000	$210,500

DESCRIPTION OF PROJECT:

The development and demonstration of a secondary treatment biological process to reduce the effluent, from a Fatty Acid Derivatives Chemical Plant, to less than 100 ppm of hexane soluble materials. Development work includes the evaluation of an existing pilot plant test unit, to be followed by a full scale (0.5MGD) demonstration at the Armour McCook, Illinois plant site. The treated effluent water quality improvement obtainable by use of a tertiary treatment process will also be explored on a pilot scale.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

10/6/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
State of Alabama
Geological Survey and Oil & Gas Board
University, Alabama

PROJECT DIRECTOR: (Name and Address)
Doyle B. Knowles
Hydraulic Engineer
University, Alabama

TITLE OF PROJECT: "Treatment and Disposal of Complex Chemical Wastes"

PROJECT SITE: Tuscaloosa, Alabama

PROGRAM (PROJECT) NUMBER: 12020 EGC

DATE OFFERED: Sept. 24, 1969

DATE ACCEPTED (AWARDED): Oct. 20, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/20/69 Thru: 4/19/72	$989,525	$314,525

DESCRIPTION OF PROJECT:

To develop and evaluate a surface or subsurface method for control of pollution from a complex chemical waste from a petrochemical complex, manufacturing alkyd resin and phenols. Also to develop methodology and/or testing techniques to permit projections of: (1) the fate of waste components, and (2) the waste assimulative capacity, of deep geological formations.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

October 15, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a ______________, under Section 6 ______________, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Mineral Pigments Corporation
Muirkirk, Maryland

PROJECT DIRECTOR: (Name and Address) Dr. Harold E. Weisberg
Technical Director
Mineral Pigments Corp.
Muirkirk, MD

TITLE OF PROJECT: Ion-Exchange Effluent Treatment Unit (PET)

PROJECT SITE: Muirkirk, Maryland

PROGRAM (PROJECT) NUMBER: 12020 ERM

DATE OFFERED: October 3, 1969

DATE ACCEPTED (AWARDED): Oct. 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/30/69 Thru: 10/29/70	$ 226,422	$115,967

DESCRIPTION OF PROJECT:

To develop and demonstrate the use of an ion-exchange process for recovery of chromate from chromate waste waters containing high concentrations (> 1000 ppm) of chromate. The proposed process is one which is used for dilute chromate content cooling tower waters.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R & D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: C. W. Rice and Company
15 Noble Avenue
Pittsburgh, Pa. 15205

TITLE OF PROJECT: Cost-Effectiveness of Industrial Waste Water Treatment Practices

PROJECT SITE: above

DATE AWARDED: June 28, 1968

FEDERAL CONTRACT: $56,250

TOTAL PROJ. COST: $56,250

PROJECT NUMBER: 14-12-435

PPBS NO: 1202

BRANCH CHIEF:

PROJECT OFFICER:

DESCRIPTION OF PROJECT:

This contract is to obtain estimates of the total expenditures required by specific chemical industries during the next five years to meet (a) state water quality standards and (b) a high percentage removal of each specific pollutant including thermal pollution. The industries covered will include those in the Standard Industrial Categories 2813, 2814, 2815, 2818, and 2871 (Ammonia and Urea only).

The project is scheduled to be completed in October, 1968.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D.C. 20242

ELD 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Grant awarded under Sec. 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR Engineering-Science, Inc.
150 East Foothills Blvd.
Arcadia, California 91006

TITLE OF PROJECT: "Preliminary Investigation Requirements-Petrochemical & Refinery Waste Treatment Facilities"

PROJECT SITE: Austin, Texas	DATE AWARDED: June 30, 1969
FEDERAL CONTRACT:	TOTAL EST. PROJ. COST: $17,000
PROJECT NUMBER: 12020 EID	PPBS NO. 12020

DESCRIPTION OF PROJECT: This project is to compile, organize, and effectively present the many components which constitute a preliminary wastewater-treatability study. It will be formulated with the intent of serving as a valuable format and source of reference for personnel charged with conducting laboratory and pilot plant programs relative to wastewater treatability including identification of the gaps in the knowledge, and presentation of the descriptions in a form useful by the Water Resources Scientific Information Center. Particular emphasis will be placed on programs where petrochemical and refinery wastewaters are involved, although many aspects of the report will have a much broader applicability.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

WJL/4/69

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PPB 1204

PAPER & ALLIED PRODUCTS

WP	12040 Letters	To	GPO	PM
524-06	EBY	Oregon State U.-Burgess	R. Scott	G. Webster
628-05	DEH	U. of Wash.-McCarthy	R. Scott	G. Webster
1166-02	EFC	U. of Wash.-Allen	R. Scott	G. Webster
1305-01	EXQ	U. of Wash.-McCarthy	R. Scott	G. Webster
	DLQ	Oregon State U. -Anderson	D. May	G. Webster
	DBD	Montana State U.-Sanks	R. Scott	G. Webster
WPRD				
12	EEL	Pulp Mfgrs. Research League	R. Scott	G. Webster
55	EMY	The Mead Corp.	R. Scott	G. Webster
69	ELW	Crown-Zellerbach Corp.	R. Scott	G. Webster
115	EZZ	N. C. State Univ.	R. Scott	G. Webster
116	EEK	Georgia-Draft Co.	R. Scott	"
117	EUG	Georgia-Draft Co.	R. Scott	"
135	DYD	International Paper Co.	G. Putnicki	"
144	ESV	Crown Zellerbach Corp.	R. Scott	"
183	ENC	Interstate Paper Corp.	E. Lomasney	"
240	DRY	Continental Can Co. Inc.	G. Putnicki	"
	DKD	The Institute of Paper Chemistry	G. Webster	"
	EJU	St. Regis Paper Co.	G. Webster	"
Contract				
14-12-162		Electro-optical Systems	C. Brunner	"

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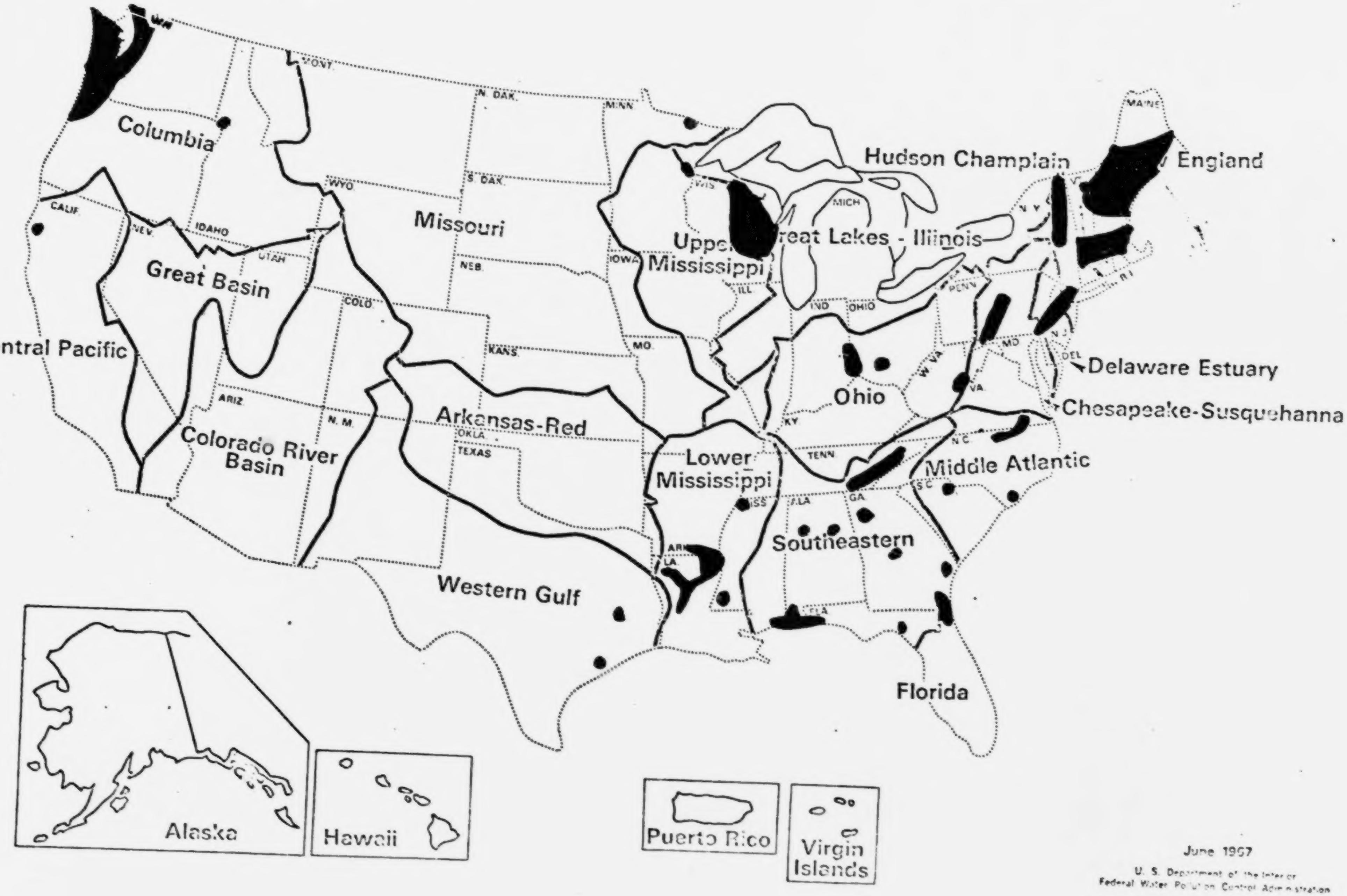
LOCATION OF MAJOR PULP & PAPER INDUSTRIES
PPB 1204: Paper & Allied Products


Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Ohio
Middle Atlantic
Southeastern
Florida
Alaska
Hawaii
Puerto Rico
Virgin Islands
WASH
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N. DAK.
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June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET

5/29/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5R of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Oregon State University
Corvallis, Oregon 97331

PROJECT DIRECTOR: (Name and Address) Mr. Fred J. Burgess
Head, Department of Civil Engineering
Oregon State University

TITLE OF PROJECT: "Pulp Mill Effluent Disposal"

PROJECT SITE: Corvallis and Newport, Oregon

PROGRAM (PROJECT) NUMBER: 12040 EBY

DATE OFFERED: May 27, 1969

DATE ACCEPTED (AWARDED): JUN 2 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/1/69 Thru: 5/31/70	$ 20,781	$ 19,237

DESCRIPTION OF PROJECT:

Research will be conducted on predicting the effects of Kraft mill waste disposal in the ocean on the marine environment. A remote sensing system and aerial photography will be utilized to estimate waste concentrations, water currents, diffusion coefficients, and vertical concentration profiles in an ocean outfall plume. Aerial photography will be taken with a multispectral camera system of the waste field. Boat sampling will be conducted at the same time to provide "ground truth" data. Data will be compiled and analyzed by a system of computer analysis which was developed for this purpose in 1968-69.

The investigation will include several Kraft mill outfalls along the Oregon coast. Results of bioassays and chemical analyses will be related to photographic imagery. Zones of water quality influence about existing outfalls and proposed outfalls will be estimated, and diffusion coefficients will be estimated.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Washington
Seattle, Washington
Dr. Joseph McCarthy

TITLE OF PROJECT: "Studies of Low Molecular Weight Lignin Sulfonates"

Effective Date: Sept. 1, 1968

PROJECT SITE: Seattle, Washington **DATE AWARDED:** Oct. 18, 1968

FEDERAL GRANT: $32,707.00 for 5th yr. **TOTAL EST. PROJ. COST:** $170,000.00

PROJECT NUMBER: WP00628-05
12040 DEH

PPBS NO. 1204

DESCRIPTION OF PROJECT: The objective of this project is to isolate and characterize low molecular weight lignin sulfonates which are formed from the lignin in wood by the action of the sulfite pulping process. The information obtained should be of assistance in developing economic uses for the waste liquors from sulfite pulp mills.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

GW/1-69

Washington, D. C. 20242

INFORMATION SHEET

June 2, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 (Research), of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) University of Washington
Seattle, Washington 98105

PROJECT DIRECTOR: (Name and Address) Dr. G. G. Allan
Associate Professor Fiber Science
College of Forest Resources

TITLE OF PROJECT: "Pollution Abatement by Fiber Modification"

PROJECT SITE: Seattle, Washington

PROGRAM (PROJECT) NUMBER: 12040 EFC

DATE OFFERED: May 28, 1969

DATE ACCEPTED (AWARDED): June 10, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: June 69 Thru: May 70 Terminal	$41,603	$37,850

DESCRIPTION OF PROJECT:

The broad aims of this research are:

1. to determine what species, size and shape of molecule can be attached to lignocellulosic fibers using simple reactions compatible with the established processes for the manufacture of fibrous products;
2. to investigate the effect of the attachment of such molecules on the physical properties of fibers and fiber composites, and
3. to use this information to assess the feasibility of reducing water pollution due to pulp liquor discharge by reattaching these waste chemicals to paper and wood fibers.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Washington
Seattle, Washington 98105

TITLE OF PROJECT: "Steam Stripping of Kraft Pulp Mill Effluent Streams"

PROJECT SITE: Seattle, Washington

DATE AWARDED: Feb. 6, 1968

FEDERAL GRANT: $43,665

TOTAL EST. PROJ. COST: $43,665

PROJECT NUMBER: WP-1305 12040 EXQ

PPBS NO. 1204

DESCRIPTION OF PROJECT: The broad objective of the presently proposed research is to improve the effectiveness and to extend knowledge concerning the possible industrial applications of the "SEKOR" process which, in essence, comprises the counter-current steam stripping of Kraft pulp mill condensate streams in order to bring about the removal of steam-volatile organic compounds from the fluid and thereby provide relatively clean effluent water which can be reused in pulp mill process or else discharged without danger. The volatilized organic substances are condensed to yield water-immiscible "SEKOR oils" which may find uses in commerce. Use of the process may also result in a substantial decrease in the odorous substances emitted into the atmosphere from Kraft pulp mills.

Major Investigator: Dr. Joseph L. McCarthy

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

GRW 1/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Oregon State University
Corvallis, Oregon 97331

TITLE OF PROJECT: "Slime Growth Evaluation of Treated Pulp Mill Wastes"

PROJECT SITE: Lebanon, Oregon

DATE AWARDED: March 12, 1969

FEDERAL GRANT: $12,910 (1st yr.)

TOTAL EST. PROJ. COST: $33,000

PROJECT NUMBER: 12040 DLQ

PPBS NO. 1204

BUDGET PERIOD: March 1, 1969 to February 28, 1970

DESCRIPTION OF PROJECT:

The main objective of this research is to evaluate the slime growth promoting potential of treated pulp mill wastes. Wastes treated by various means will be tested for their ability to support slime growth using various procedures. Additional studies will be carried out in an effort to define specific carbon and nitrogen sources in treated wastes which support the growth of Sphaerotilus. The effects of environmental factors on growth of Sphaerotilus also will be examined. This study will contribute to the development of abatement procedures for controlling slime growth as well as assist in establishing suitable water quality criteria for streams receiving pulp mill wastes. The study also will add to the knowledge of Sphaerotilus.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Montana State University
Bozeman, Montana 59715

TITLE OF PROJECT: "Color and Mineral Removal from Kraft Bleach Wastes"

PROJECT SITE: Bozeman, Montana

DATE AWARDED: April 1, 1969

FEDERAL GRANT: $27,324

TOTAL EST. PROJ. COST: $32,791 (first) year

PROJECT NUMBER: 12040 DBD

PPBS NO. 1204

DESCRIPTION OF PROJECT:

BUDGET PERIOD: April 1, 1969 to March 31, 1970

The broad objective of this research is to determine the economic potential of synthetic resins for the control of pollution from kraft bleach wastes particularly in reuse and recycle systems.

More specifically, the objectives are (1) to explore the use of synthetic resins for the removal of color and other refractory organic contaminants, (2) to optimize the operation of fixed resin beds for the removal of organic contaminents and also for simultaneous demineralization of waste streams intended for reuse and recycle, (3) to seek economical regenerating methods and chemicals and innocuous means of waste regenerant disposal, (4) to compare the relative effectiveness and economy of resins with carbon and (5) to estimate the cost of waste water renovation, reuse, and recycle using resins either alone or in conjunction with other aids.

INQUIRIES: Contact the INDUSTRIAL POLLUTION CONTROL BRANCH, DAST.
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Pulp Manufacturers Research League, Appleton, Wisconsin

TITLE OF PROJECT: Development of Reverse Osmosis for In-Plant Treatment of Dilute Pulping Industry Wastes.

PROJECT SITE: 6 mills to be used

DATE AWARDED: ~~8-7-67~~ Sept 26 '67

FEDERAL GRANT: $483,371

TOTAL EST. PROJ. COST: $690,530

PROJECT NUMBER: WPRD 12-01-68
12040 EEL

PPBS NO. 1204

DESCRIPTION OF PROJECT:

The project will determine the ability of reverse osmosis technology to both produce a product water suitable for re-use in mill processes, and a concentrate available for by-product recovery or for treatment prior to discharge. Wastes to be handled, at separate mills, will include weak sulfite washings, weak Kraft washings, bleach wastes, condensates and semi-chemical wastes. The semi-trailer housed reverse osmosis equipment will be transported to separate mills for the experimental work. Presently projected mill sites are located in Wisconsin and Minnesota. Others are to be selected.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: The Mead Corporation
Chillicothe, Ohio

TITLE OF PROJECT: "Evaluation of Role of High Rate Trickling Filters and Aeration Devices Separately and in Combination for the Advanced Biological Treatment of Integrated Kraft Pulp and Paper Mill Effluents"

PROJECT SITE: Chillicothe, Ohio

DATE AWARDED: December, 1966

FEDERAL GRANT: $299,950 or 70% of project

TOTAL EST. PROJ. COST: $428,500

PROJECT NUMBER: WPRD 55-01-67
12040 EMY

PPBS NO. 1204

DESCRIPTION OF PROJECT: The pulp and paper industry needs to find an alternative treatment process which is less expensive and difficult-to-operate than the conventional activated sludge process. As a step in this direction, this project will involve the continuous operation of a pilot treatment plant containing plastic trickling filter, brush-aerated oxidation ditch, conventional aerated lagoon, deep aerated lagoons, and two clarifiers in combinations and evaluate possible efficiencies.

The specific research objectives are to: determine the effect of influent quality on biological treatment; evaluate potential of plastic trickling filters alone and in combination with brush-aerated oxidation ditch, conventional aerated lagoon and deep aerated lagoon; and to achieve higher-than-conventional BOD removals from kraft mill wastes.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

8/68

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Crown Zellerbach Corp., Camas, Washington.

TITLE OF PROJECT: Economic Optimization of Secondary Treatment and Determination of Load to Control Biological Growths in a Stream.

PROJECT SITE: Lebanon, Oregon

DATE AWARDED: 12-5-67 (O&A)

FEDERAL GRANT: $503,739

TOTAL EST. PROJ. COST: $802,000

PROJECT NUMBER: WPRD 69-01-68
12040 ELW

PPBS NO. 1204

DESCRIPTION OF PROJECT:

This project will seek to determine the costs of mechanically aerated lagoon treatment of pulp mill and paper mill wastes by examining in detail the comparison of retention time, aerated logoon depth, basin configuration, recycle and parallel versus series operation of two lagoons. Information will also be obtained concerning treatment achieved by multiple lower hp surface aerators compared to two high hp units. Further, the project will, by use of test streams, seek to determine the degree of treatment needed to prevent slime growth in the receiving stream.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted] *W.*
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: N. Carolina State University, Raleigh, N. C.

TITLE OF PROJECT: Filtration of Kraft Pulp Liquor through Chips

PROJECT SITE: Raleigh, N. C.

DATE AWARDED: 8-4-67 (O&A)

FEDERAL GRANT: $18,144

TOTAL EST. PROJ. COST: $25,920

PROJECT NUMBER: WPRD 115-01-68
12040 EZZ

PPBS NO. 1204

DESCRIPTION OF PROJECT:

The project is directed toward a determination of the decrease in pollutional load that may be gained by filtration of weak Kraft washings through wood chips just prior to their entry into the pulping process.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Georgia-Kraft Co., Rome, Ga.

TITLE OF PROJECT: Treatment of Selected Internal Kraft Mill Wastes in Cooling Tower

PROJECT SITE: Macon, Georgia

DATE AWARDED: 8-7-67 (O&A)

FEDERAL GRANT: $287,000

TOTAL EST. PROJ. COST: $411,000

PROJECT NUMBER: WPRD 116-01-68
12040 EEK

PPBS NO. 1204

DESCRIPTION OF PROJECT:

This project will determine the ability of cooling towers to both permit heat dissipation and recycle of waste water back to the condensers as well as the treatment efficiency that may be provided by passage of waste waters through the tower. Condensates and decker filtrate will be handled by this facility. Organic load reduction will probably be gained by a combination of chemical oxidation, air stripping of volatile constituents and biochemical oxidation.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Georgia-Kraft Co., Rome, Ga.

TITLE OF PROJECT: Treatment of Kraft Mill Effluent by Foam Separation

PROJECT SITE: Rome, Ga.

DATE AWARDED: 8-4-67 (O&A)

FEDERAL GRANT: $48,181

TOTAL EST. PROJ. COST: $68,830

PROJECT NUMBER: WPRD 117-01-68
12040 EUG

PPBS NO. 1204

DESCRIPTION OF PROJECT:

The project is directed toward an examination of the possible separation, in the foam phase, of a significant portion of the dissolved organics contained in primary treated Kraft Mill waste. Hopefully it may be discovered that a high percent of the pollutional load may be separated in a relatively small volume by these means. This may then provide a larger volume of 'bottoms' suitable for discharge and a smaller volume of 'tops', or collapsed foam, directed to complete treatment.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: International Paper Company
220 East 42nd Street
New York, New York 10017

TITLE OF PROJECT: "Evaluation and Demonstration of the Massive Lime Process for the Removal of Color from Kraft Pulp Mill Wastes."

PROJECT SITE: Springhill, Louisana **DATE AWARDED:** JUN 1 4 1968

FEDERAL GRANT: $595,000 **TOTAL EST. PROJ. COST:** $850,000

PROJECT NUMBER: WPRD-135-01-(R-1)-68 **PPBS NO.** 1204
12040 DYD

DESCRIPTION OF PROJECT:

International Paper Company proposes to isolate wastes from the caustic extraction stage of a Kraft pulp bleaching line and the unbleached decker of the pulp mill, and to treat these wastes separately and combined for the removal of color and reduction of biochemical oxygen demand by the Massive Lime Process over a period of 27 months.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

GRW/5-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Crown Zellerbach Corporation
1 Bush Street
San Francisco, California 94119

TITLE OF PROJECT: "A Demonstration Plant Evaluation of Four Methods for Pulp and Paper Mill Sludge Utilization and Disposal"

PROJECT SITE: Camas, Washington

DATE AWARDED: April 3, 1968

FEDERAL GRANT: $350,000

TOTAL EST. PROJ. COST: $848,320

PROJECT NUMBER: WPRD 144-01-68
12040 ESV

PPBS NO. 1204

DESCRIPTION OF PROJECT:

This demonstration study is a full-scale investigation of four methods of utilization and disposal of primary sludge from a combined pulp and paper mill. The areas of investigation are: disposal by incineration, utilization as "hog-fuel" make-up in a conventional steam boiler at rates ranging between 5 and 50%, use as a dried mulching material for highway slope preparation and the evaluation of sludge as an agricultural soil conditioner.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Interstate Paper Corporation
300 East 42nd Street
New York, New York 10017

TITLE OF PROJECT: "Chemical Coagulation Color Removal System for Kraft Mill Effluents"

PROJECT SITE: Riceboro, Georgia

DATE AWARDED: June 27, 1968

FEDERAL GRANT: $466,895

TOTAL EST. PROJ. COST: $741,160

PROJECT NUMBER: WPRD-183-01-68
12040 ENC

PPBS NO. 1204

DESCRIPTION OF PROJECT: This project proposes to develop, install, and demonstrate a new chemical coagulation process for removing color from kraft pulp and paper mill effluents. The process uses a stoichiometric lime addition to the untreated wastes, prior to primary sedimentation, which adsorbs the color bodies onto the lime floc and is settled with the sludge. This sludge is then removed to lagoons for drying and storage.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

GRW:5/68

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Continental Can Company, Inc.
Paperboard and Kraft Paper Division
Hodge, Louisiana 71247

TITLE OF PROJECT: "A Color Removal and Fibrous Sludge Disposal Process for the Kraft Paper Industry"

PROJECT SITE: Hodge, Louisiana

DATE AWARDED: JUL 25 1968

FEDERAL GRANT: $750,000.00

TOTAL EST. PROJ. COST: $2,865,970

PROJECT NUMBER: WPRD-240-01-68
12040 DRY

PPBS NO. 1204

DESCRIPTION OF PROJECT: The two year project will develop economical design and operational data applicable to the Kraft pulp and paper industry in removal of color in mill effluents, and disposing of fibrous sludges. Color removal will be accomplished by lime precipitation of the color bodies and fibers, with subsequent regeneration of the lime by sludge combustion in a kiln.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Institute of Paper Chemistry
Appleton, Wisconsin 54911

TITLE OF PROJECT: "Chemical and Physical Nature of Color Bodies in Kraft Mill Effluents Before and After Treatment"

PROJECT SITE: Appleton, Wisconsin

DATE AWARDED: DEC 31 1968

FEDERAL GRANT: $119,504.70

TOTAL EST. PROJ. COST: $170,721

PROJECT NUMBER: 12040DKD

PPBS NO. 1204

DESCRIPTION OF PROJECT:

Kraft pulping wastes which are discharged into streams may darken the color of the water, contribute to the biochemical oxygen demand and increase the solids content of the stream. New federal and state water standards will require removal of such materials from mill effluents. Lime precipitation in small scale operations has been shown to remove certain of the solid constituents and demonstration grants on lime treatments have been approved at three kraft mill sites.

The objective of the proposed project is to determine the chemical and physical nature of the color bodies in the effluents from these three kraft mills both before and after lime treatment. The investigation should lead to a better understanding of the results of the lime treatments, and may suggest means for more complete removal of color.

INQUIRIES: **Contact the** Industrial Pollution Control Branch - DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET

June 19, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section Six of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
St. Regis Paper Company
150 East 42nd Street
New York, New York 10017

PROJECT DIRECTOR: (Name and Address)
Mr. Roy L. Miller
Post Office Box 1591
Pensacola, Florida 32502

TITLE OF PROJECT: "The Production and Use of Activated Carbon for Water Renovation in Kraft Pulp and Paper Mills"

PROJECT SITE: Jacksonville and Pensacola, Florida; and West Nyack, New York

PROGRAM (PROJECT) NUMBER: 12040 EJU

DATE OFFERED: JUN 1 3 1969

DATE ACCEPTED (AWARDED): JUN 2 5 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6-30-69 Thru: 6-30-72	$1,461,562	$878,472

DESCRIPTION OF PROJECT:

St. Regis Paper Company proposes a program for the development of an economical system for maximum water reuse in the kraft pulp and paper industry as a means of water pollution control and conservation. This program is based on two concepts. The first is an effluent treatment cycle using activated carbon and the second is on-site carbon production and activation from readily available raw materials with full integration into the kraft mill recovery and power systems to achieve the lowest net cost of activated carbon.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT ~~GRANT~~ CONTRACT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Contract *Federal Water Pollution Control Act (Clean Water Restoration Act).*

GRANTEE: Electro-Optical Systems, Inc.
300 North Halstead St.
Pasadena, California 91107

TITLE OF PROJECT: "Plasma Arc Processing of Spent Sulfite Liquors"

PROJECT SITE: Pasadena, California	***DATE AWARDED:*** May 16, 1968
FEDERAL GRANT: $49,945.00	***TOTAL EST. PROJ. COST:*** $49,945.00
PROJECT NUMBER: 14-12-162	***PPBS NO.*** 1204

DESCRIPTION OF PROJECT: To determine the technical and economic feasibility of plasma arc treatment of sulfite waste liquors.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

GRW 1/69

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PPB 1205

PETROLEUM & COAL PRODUCTS

WP	12050 Letters	To	GPO	PM
1179	DIT	Texas A&M Res. Fdn. - A. Martell	L. Lively	G. Rey
	DHF	U. of Oklahoma-Reid	L. Myers	E. Dulaney
1452	DRC	Illinois Institute of Technology-Kirtner	C. Risley	E. Dulaney
	DHR	Harvard U.-Speilman	R. Keppler	E. Dulaney
WPRD				
215	EKT	American Oil Co.	O. Olsen	G. Rey
243	DSH	Am. Petroleum Inst.	P. Lefcourt	E. Dulaney
	DHG	American Oil Co.	C. Risley	G. Rey
Contract				
14-12-461	EKT	Engineering Science, Inc. - Gloyna	W. Horn	G. Rey

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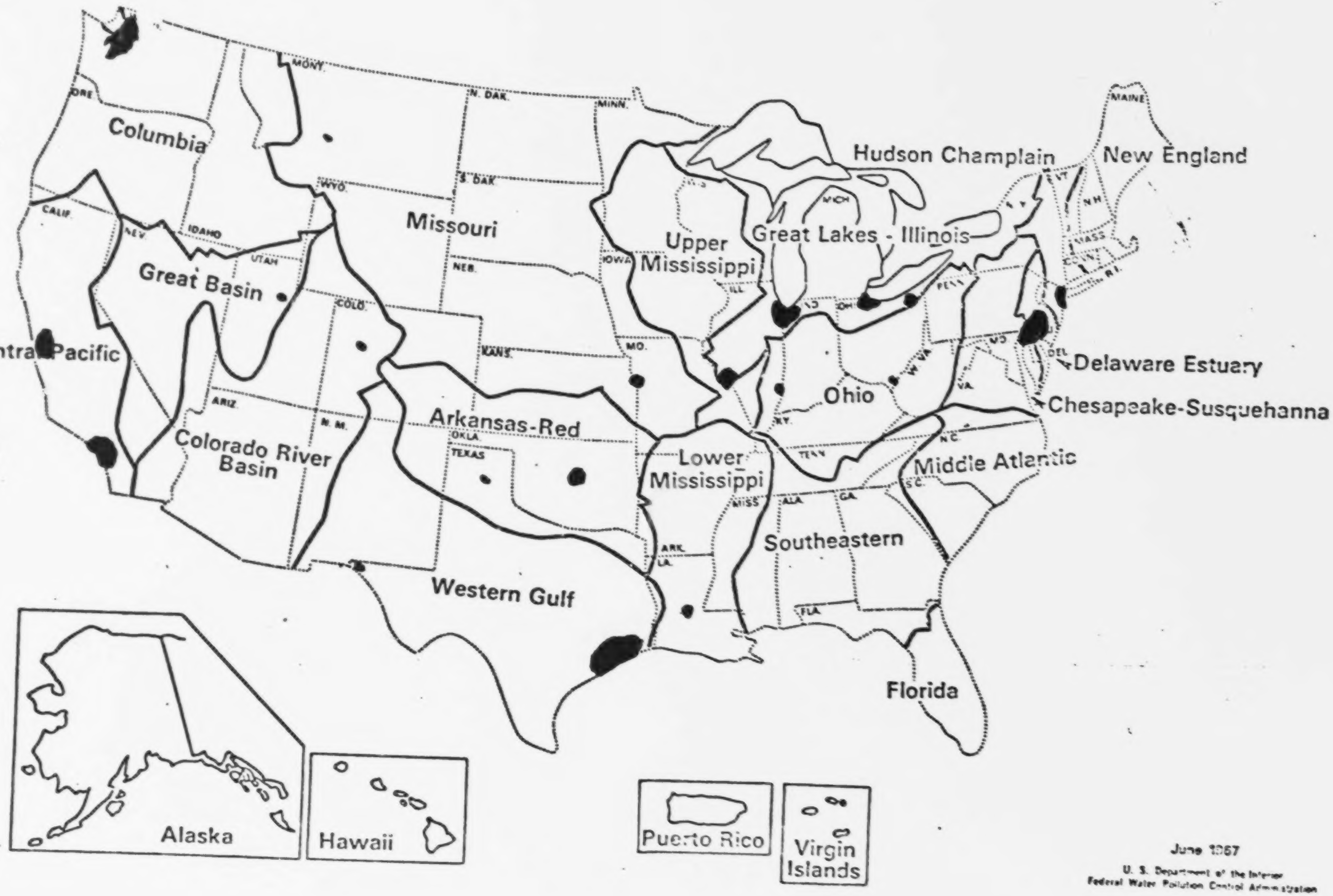
LOCATION OF MAJOR PETROLEUM REFINERIES
PPB 1205: Petroleum & Coal Products


Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Ohio
Middle Atlantic
Southeastern
Florida
Alaska
Hawaii
Puerto Rico
Virgin Islands
MONT.
N. DAK.
MINN.
ORE
WYO.
S. DAK.
CALIF.
NEV.
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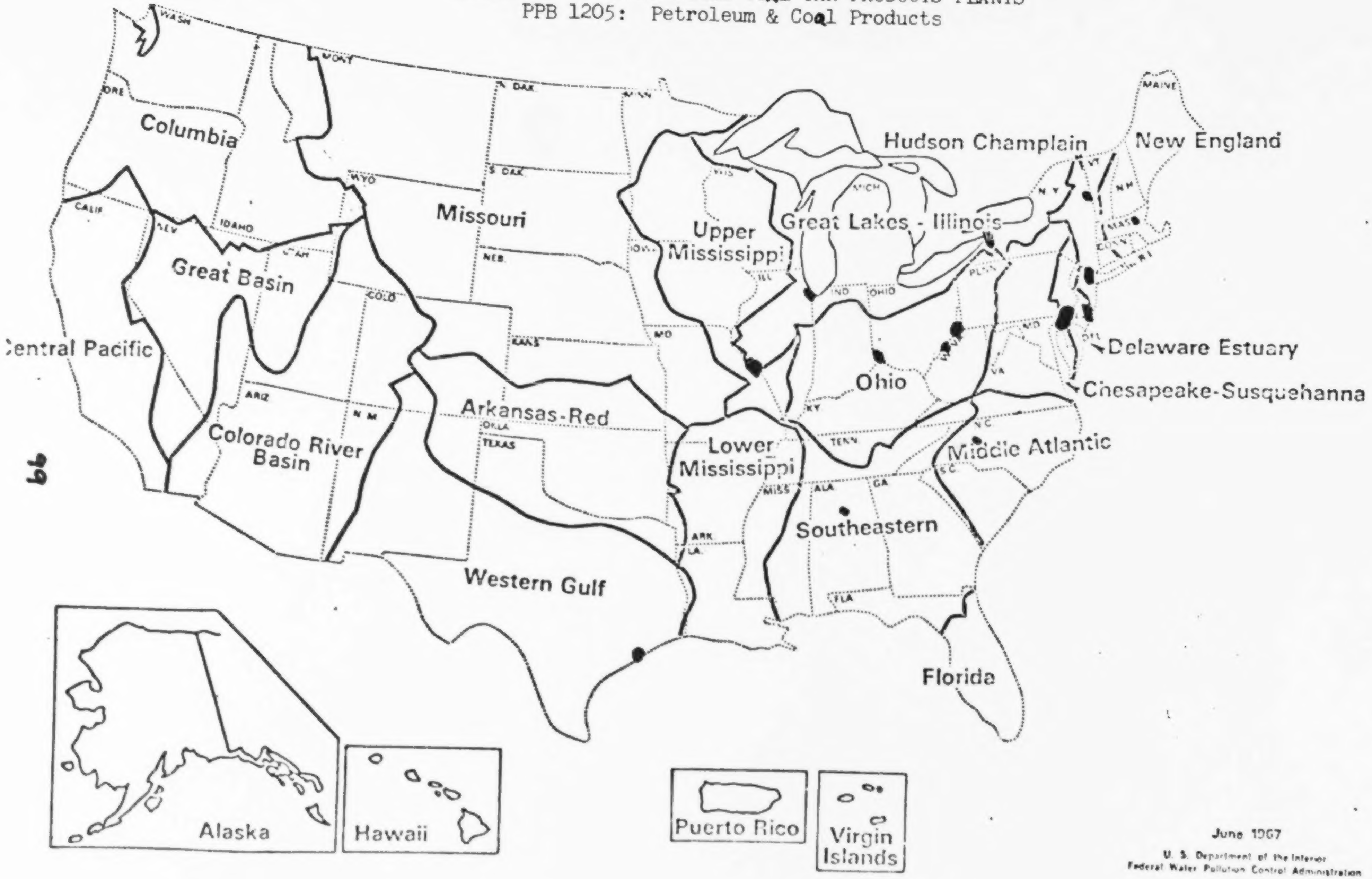
June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

LOCATION OF INTERMEDIATE COAL TAR PRODUCTS PLANTS
PPB 1205: Petroleum & Coal Products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Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Ohio
Middle Atlantic
Southeastern
Florida
Alaska
Hawaii
Puerto Rico
Virgin Islands

June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Texas A&M Research Foundation

TITLE OF PROJECT: "Metal Ion-Catalyzed Oxidation of Phenols and Aromatic Amines"

PROJECT SITE: Texas A&M

DATE AWARDED: ~~[illegible]~~ October 14, 1968

FEDERAL GRANT: $40,265

TOTAL EST. PROJ. COST: $234,000

PROJECT NUMBER: WP 01179-03
12050 DIT

PPBS NO. 1205

DESCRIPTION OF PROJECT: A Study of the mechanism and feasibility of metal ion-catalyzed oxidation of phenols and aromatic amines by molecular oxygen in wastewater systems partially treated with potassium permanganate.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

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INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) University of Oklahoma Research Institute
1808 Newton Drive
Norman, Oklahoma 73069

PROJECT DIRECTOR: (Name and Address) Prof. George Reid

TITLE OF PROJECT: State-of-the-Art Evaluation on Petroleum and Coal Wastes

PROJECT SITE: Norman, Oklahoma

PROGRAM (PROJECT) NUMBER: 12050 DKF

DATE OFFERED:

DATE ACCEPTED (AWARDED): Jan. 8, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/15/68 Thru: 10/14/69	$17,897	$14,297

DESCRIPTION OF PROJECT:

The objective of this project is to develop a state of art report on the characteristics of oil and coal wastes. The study will include the procedures used by industry for aggrigating and handling these wastes and will determine the applicability and efficiencies of various treatment processes. Literature surveys, personal interviews and field studies will be used to define future research needs.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD 1/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Illinois Institute of Technology

TITLE OF PROJECT: Efficiency of Fibrous Bed Coalescers

PROJECT SITE: Chicago, Illinois

BUDGET PERIOD: Dec. 1, 1968-Nov. 30, 1969

DATE AWARDED: Jan. 13, 1969

FEDERAL GRANT: $32,596 for the 1st year

TOTAL EST. PROJ. COST: $65,000

PROJECT NUMBER: WP-01452-01
12050 DRC

PPBS NO. 1205

DESCRIPTION OF PROJECT:

The objective of this research project is to develop a mathematical description of the removal of fine-divided, insoluble, liquid pollutants from an aqueous waste stream by means of a mixed fibrous bed, and to develop a procedure for designing such beds. The procedure will then be applied to the abatement of pollution from an actual industrial source in the Chicago area.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD 1/69

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INFORMATION SHEET

September 10, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 R of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
President & Fellows of Harvard College
Office of Research Contracts
1350 Massachusetts Avenue
Cambridge, Mass. 02138

PROJECT DIRECTOR: (Name and Address)
Dr. Lloyd A. Speilman
Pierce Hall - Room 124
Harvard University
Cambridge, Mass 02138

TITLE OF PROJECT: "Oil Dispersion Coalescence by Porous Solid Contact"

PROJECT SITE: Cambridge, Mass.

PROGRAM (PROJECT) NUMBER: 12050 DXR

DATE OFFERED: September 2, 1969

DATE ACCEPTED (AWARDED): Oct. 1, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Sept. '69 Thru: Aug 31, '70	$16,157	$15,349

DESCRIPTION OF PROJECT: This project will be directed at clarifying the fundamental mechanisms underlying bed coalescense and the formulation of general design criteria through a mathematical description of pressure drop and coalescense performance. The formulation will be guided by the experimental determination of the extent of phase separation and pressure drop under controlled variation of inlet drop size, suspension chemistry, median grain size, bed depth, flow rate, and grain surface treatment. The results of this work should be of use in the design of separation processes for treating aqueous oil dispersions.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

8/69
ELD

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: American Oil Company
910 S. Michigan Avenue
Chicago, Illinois 60680

TITLE OF PROJECT: Fluid-Bed Incineration of Petroleum Refinery Waste

PROJECT SITE: Mandan, North Dakota

DATE AWARDED: May, 1968

FEDERAL GRANT: $170,265

TOTAL EST. PROJ. COST: $354,530

PROJECT NUMBER: WPRD-215-01-68
12050 EKT

PPBS NO. 1205

DESCRIPTION OF PROJECT:

The project consists of: (1) the design and construction of a fluid-bed incineration system for treatment of refinery chemical and oil sludge wastes, and (2) the operation and evaluation of the system as a means of treating the refinery wastes.

Capacities up to 70 barrels per day, at full scale, are to be processed. The identity of operating problems and the limitations of the system are to be determined. The cost of treatment of the refinery waste by the proposed method will be developed for the system as optimized during the demonstration period.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: American Petroleum Institute
Air and Water Conservation
1271 Avenue of the Americas
New York, New York 10020

TITLE OF PROJECT: "Improved Capabilities of Biological Systems to Assimilate Oil"

PROJECT SITE: New York, New York

DATE AWARDED: June 20, 1968

FEDERAL GRANT: $51,470

TOTAL EST. PROJ. COST: $84,990

PROJECT NUMBER: WPRD 243-01-68
12050 DSH

PPBS NO. 1205

DESCRIPTION OF PROJECT:

The project will consist of a study of laboratory scale activated sludge waste treatment systems which will be operated to determine their tolerance to various types and amounts of hydrocarbons, the nature of the interference of the hydrocarbons, the fate of the hydrocarbons in the system, and to study methods for improving pretreatment of the influent and of improving the operation of the systems.

The work will be performed by Hydroscience, Inc. under the direction of an API Task Force. The project period will be 1 year.

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

ELD/5-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: American Oil Company
910 South Michigan Avenue
Chicago, Illinois

TITLE OF PROJECT: "Treatment of Refinery Effluent by a Unique Combination of Biological and Chemical Processes.

PROJECT SITE: Whiting, Indiana

DATE AWARDED: February 20, 1969

FEDERAL GRANT: $336,535

TOTAL EST. PROJ. COST: $1,737,775

PROJECT NUMBER: 1205 - 0 - DML

PPBS NO. 1205

DESCRIPTION OF PROJECT:

A 30 MGD scale project to demonstrate the advantages of using chemical coagulation and air flotation following biological conditioning to provide refinery effluent of high quality. To establish what operating flexibilities exist in such combination processing and the costs associated therewith. To evaluate a number of unique design features, including a hitherto unproven process for disposal of oily sludges, a unique and low-cost method for preventing sludge deposition in an aerated lagoon, a novel application of rotary-drum skimmers and a comparative study of alternate design features for air flotation.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R & D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Engineering Science, Inc.
150 East Foothill Blvd.
Arcadia, California 19006

TITLE OF PROJECT: The Characteristics and Pollutional Problems Associated with Petrochemical Wastes

PROJECT SITE: Austin, Texas

DATE AWARDED: Sept. 25, 1968

FEDERAL CONTRACT: $11,190.00

TOTAL PROJ. COST: $11,190.00

PROJECT NUMBER: 14-12-461
12050 DMT

PPBS NO: 1205

BRANCH CHIEF: William J. Lacy

PROJECT OFFICER: George Rey

DESCRIPTION OF PROJECT: The general scope of the project as developed under the Plan of Operation shall include a detailed development of the following:

1. History and Projection of petrochemical industry;
2. Definition, magnitude, and pollutants associated with these waste treatment problems;
3. Evaluation of control, treatment and disposal practices;
4. Listing of the special legal problems involved with petrochemical waste management;
5. Economic feasibility of present and future control methods, reflecting down stream uses; and
6. Evaluation of research needs.

The objectives of this proposed project will be achieved through a well coordinated plan of operation. A complete literature review shall be conducted using the numerous volumes available in the Engineering, Chemistry, Biology, and personal libraries located on the University of Texas campus. Additional information shall be obtained from various governmental agencies and selected industries. Additional data derived from the unpublished Environmental Health Engineering Reports shall be utilized.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D.C. 20242

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PPB 1206

FOOD & KINDRED PRODUCTS

WP	12060 Letters	To	GPO	PM
1486		U. of Wash. - Carlson	J. Boydston	G. Keeler
	ECF	Oregon State U.	K. Dostal	G. Keeler
	EDK	National Canners Asso.	W. Pierce	G. Keeler
	EGU	Ohio State U. Res. Fdn.	E. Harris	G. Keeler
	DSI	Beet Sugar Development Fdn.	K. Dostal	G. Keeler
WPD				
93		Beet Sugar Development Fdn.	J. Boydston	G. Keeler
211	EHS	Melbourne Water Sci. Inst.	K. Dostal	G. Keeler
226	FDR	Ag. Experiment Station U. of Puerto Rico	E. Lomasney	G. Keeler
WPRD				
3		RAI Research Corp.	A. Richardson	G. Keeler
15	EHV	R.T. French Co.	J. Boydston	G. Keeler
18	EZP	FMC Corp.	J. Merrel	G. Keeler
38		Minute Maid Co.	D. Hill	G. Keeler
43	FAK	Beet Sugar Dev. Fdn.	R. Scott	G. Keeler
49	EHT	North Star R&D Inst.	W. Cooke	G. Keeler
54	EUB	John Morrell & Co.	O. Risley	G. Keeler
56	FAG	Vahlsing, Inc.	H. Pahren	G. Keeler
58	FAD	Snokist Growers	J. Boydston	G. Keeler
134	EHU	National Canners Asso.	W. Pierce	G. Keeler
151		National Canners Asso.	W. Pierce	G. Keeler
161	EZY	Winter Garden Citrus Products Co-op	D. Hill	G. Keeler

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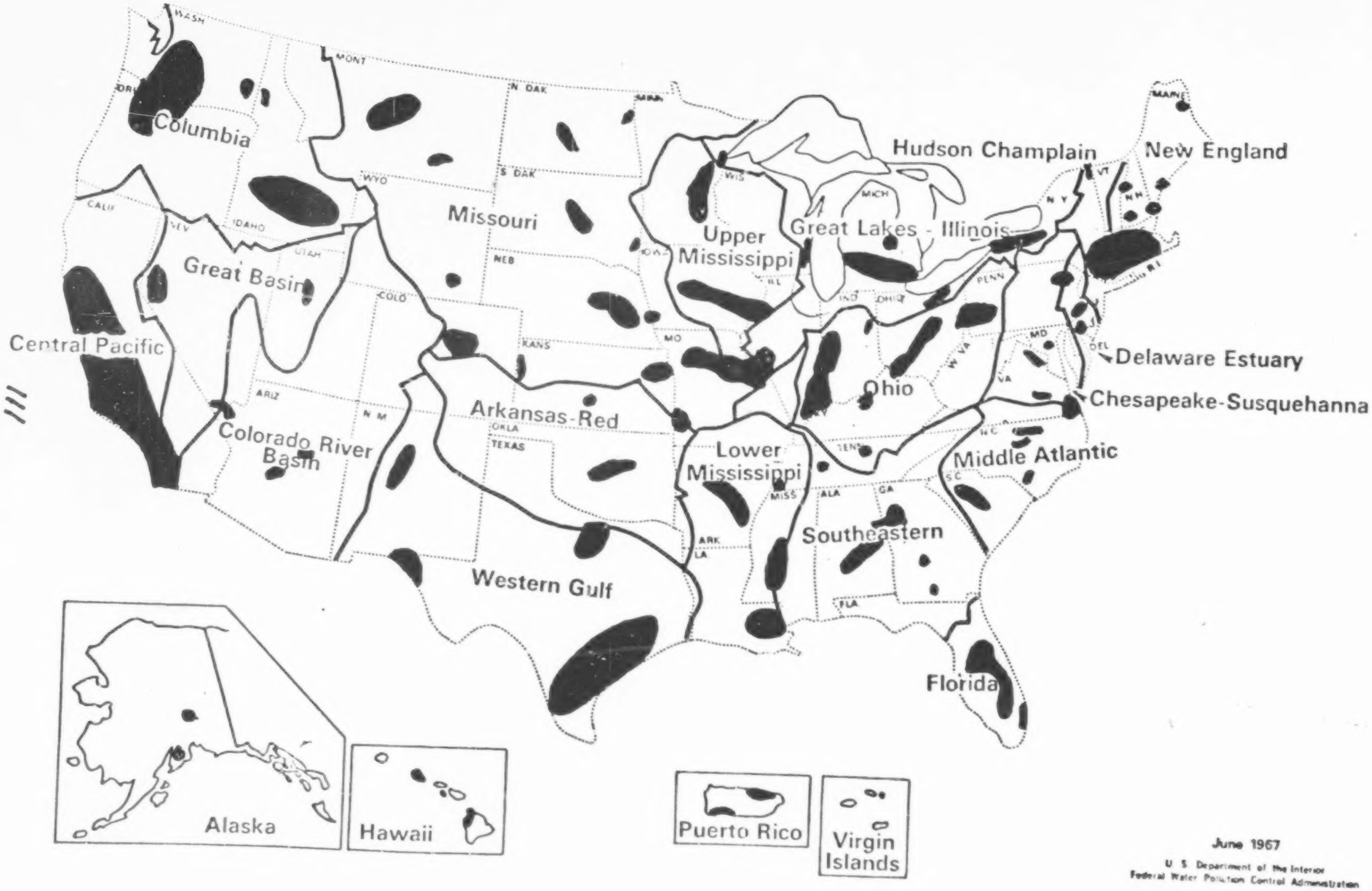
PPB 1206 Cont'd

FOOD & KINDRED PRODUCTS

WP	12060 Letters	To	GPO	PM
185	DQV	Swift & Company	C. Risley	G. Keeler
219	DEQ	Dairy R&D Corp.	G. Rey	G. Keeler
221	DPE	Corn Products Co.	C. Risley	G. Keeler
230	DSB	U. of Oklahoma Res. Inst.	G. Putnicki	G. Keeler
241	DFF	Farmbest Inc.	O. Olsen	G. Keeler
251	EAE	National Canners Assn.	W. Pierce	G. Keeler
	EGV	Gold Kist Poultry	H. Snyder	G. Keeler
	EIG	Western Potato Service	K. Dostal	G. Keeler
	DXF	Crowley's Milk Co.	A. Richardson	G. Keeler
	EDZ	Green Giant Co.	G. Keeler	G. Keeler
	EKQ	Kent Cheese Co.	G. Keeler	G. Keeler
	EOF	Illinois Packing Co.	G. Keeler	G. Keeler
	EUZ	Widmers Wine Cellars	G. Keeler	G. Keeler
	DXL	Nat. Canners-Ion Exchange		G. Keeler
	FDS	Beefland International	O. Olsen	G. Keeler

LOCATION OF MAJOR FOOD PROCESSING PLANTS
PPB 1206: Food & Kindred Products


Columbia
Great Basin
Central Pacific
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Ohio
Delaware Estuary
Chesapeake-Susquehanna
Middle Atlantic
Southeastern
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June 1967

U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5 Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Washington
Professor Dale A. Carlson

TITLE OF PROJECT: Status and Research Needs for Potato Waste Waters

PROJECT SITE: Seattle, Washington

DATE AWARDED: June 1, 1968

FEDERAL GRANT: $18,364

TOTAL EST. PROJ. COST: $19,331

PROJECT NUMBER: WP-01486-01

PPBS NO. 1206

DESCRIPTION OF PROJECT: The objective of this project is to prepare an exhaustive state-of-the-art report on potato processing waste waters including identification of process and waste streams, effects of process modification, types of processes and corresponding waste water treatment processes, effects of waste streams on receiving waters and land areas, and recent research developments. The report will include a discussion of current major research needs.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research amd Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

RN 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5 Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Department of Food Science and Technology
Oregon State University
Corvallis, Oregon 97331

TITLE OF PROJECT: "Water Pollution Abatement in the United States Seafoods Industry: State of the Art"

EFFECTIVE DATE: June 30, 1969

PROJECT SITE: Corvallis, Oregon

DATE AWARDED: April 15, 1969

FEDERAL GRANT: $17,695

TOTAL EST. PROJ. COST: $18,652.00

PROJECT NUMBER: 12060 ECF

PPBS NO. 1206

DESCRIPTION OF PROJECT: The objective of this 8 months study will be the development of a State of the Art document on water pollution abatement technology and research for the seafoods processing industry.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: National Canners Association
1133-20th Street, N. W.
Washington, D.C. 20036

TITLE OF PROJECT: "Production and Disposal Practices for Liquid Wastes From Canning and Freezing Fruits and Vegetables"

PROJECT SITE: NCA, Berkeley, Calif.
U. of Wisconsin, Madison

DATE AWARDED: May 6, 1969

FEDERAL GRANT: $20,025

TOTAL EST. PROJ. COST: $22,542

PROJECT NUMBER: 12060 EDK

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this one year project will be the development of a state-of-art document to encompass: (1) current and projected contribution of this industry to the national water pollution problem; (2) description of present and anticipated waste treatment technology to include construction and operational data (3) identification of areas requiring further development.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

HGK 4/7/69

INFORMATION SHEET

June 18, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 Research Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Ohio State University Research Foundation
1314 Kinnear Rd.
Columbus, Ohio 43212

PROJECT DIRECTOR: (Name and Address)
Dr. W. James Harper
215 Vivian Hall
2121 Fyffe Road
Columbus, Ohio 43210

TITLE OF PROJECT: "State of the Art of Dairy Plant Wastes and Waste-Treatment Systems"

PROJECT SITE: Columbus, Ohio

PROGRAM (PROJECT) NUMBER: 12060 EGU

DATE OFFERED: **June 17, 1969**

DATE ACCEPTED (AWARDED): June 27, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$ 18,505	$ 12,954

DESCRIPTION OF PROJECT:

The objective of this one year project is the development of a State of the Art document for the dairy industry. Plant processing methods, water utilization, waste streams in various size and type of operations, dairy food plant waste treatment systems as a function of processing practice, plant size and location, current industrial development in dairy food processing and waste treatment, present research in progress and future research needs in relation to dairy wastes, will be covered.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. **6,** *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: Beet Sugar Development Foundation
156 South College Avenue
P. O. Box 538
Fort Collins, Colorado 80521

TITLE OF PROJECT: "State-of-Art, Sugarbeet Processing Waste Treatment"

PROJECT SITE: Fort Collins, Colorado

DATE AWARDED: April 18, 1969

FEDERAL GRANT: $14,310

TOTAL EST. PROJ. COST: $15,900

PROJECT NUMBER: 12060 DSI

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this 8 month project will be the development of a state-of-art document emcompasing current domestic and foreign waste treatment technology in the sugarbeet processing industry. The report will include recommendations on major research needs.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Beet Sugar Development Foundation
P.O. Box 538
Fort Collins, Colorado 80521

TITLE OF PROJECT: Anaerobic-Aerobic Sugar Beet Waste Treatment

PROJECT SITE: Tracy, California

DATE AWARDED: June 1, 1968

FEDERAL GRANT: $25,300 - 4th year

TOTAL EST. PROJ. COST: $243,450

PROJECT NUMBER: WPD 93-04-68

PPBS NO. 1206

DESCRIPTION OF PROJECT: The objective of this project is to demonstrate a solution to the pollution and odor problems encountered in beet sugar factory waste disposal. This will be accomplished by passing the wastes (mainly screened flume water) through system of anaerobic-facultative-aerobic lagoons set up in series. Some water from the aerobic lagoon will be recycled back to the surface of the anaerobic lagoon to eliminate odors.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

RN 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:
Melbourne Water Science Institute
Water Science Laboratories
15-21 Earl Street
Carlton, Victoria, Australia

TITLE OF PROJECT: "Cannery Waste Treatment by Lagoons"

PROJECT SITE: Shepparton, Victoria Australia

DATE AWARDED: May 1, 1969

FEDERAL GRANT: $11,920

TOTAL EST. PROJ. COST: $61,810

PROJECT NUMBER: WPD 211-02-68
12060 EHS

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this study will be to demonstrate the feasibility of treating fruit and vegetable processing wastes by anaerobic lagoons and oxidation ditches.

The existing 100,000 gpd facilities at Shepparton will continue to be used during the final year of 2 year project to evaluate and optimize operational parameters of the anaerobic-aerobic system operating jointly or independently.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Agricultural Experiment Station
University of Puerto Rico
Rio Piedras, Puerto Rico

TITLE OF PROJECT: Disposal of Rum Distillery Wastes

PROJECT SITE: Rio Piedras, Puerto Rico

DATE AWARDED: July 1, 1968

FEDERAL GRANT: $46,252 - 1st year

TOTAL EST. PROJ. COST: $85,400

PROJECT NUMBER: WPD-226-01-68
12060 FDR

PPBS NO. 1206

DESCRIPTION OF PROJECT: The objective of this project is to develop the best method for the disposal of rum distillery waste. The waste will be subjected to detailed analysis and then will undergo pilot treatment by means of anaerobic digestion, activated sludge, and lagooning. These processes will then be evaluated in terms of efficiency and economics.

INQUIRIES: **Contact the** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

RN 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: RAI Research Corporation
36-40 37th Street
Long Island City, New York 11101

TITLE OF PROJECT: Improvement of Treatment of Food Industry Waste

PROJECT SITE: Long Island City, N.Y.

DATE AWARDED: Feb. 9, 1968

FEDERAL GRANT: $40,075/1 year

TOTAL EST. PROJ. COST: $57,250

PROJECT NUMBER: WPRD 3-01-68

PPBS NO. 1206

PROJECT OFFICER: Allyn Richardson NERO

DESCRIPTION OF PROJECT:

To investigate on a laboratory scale electrochemical oxidation of milk whey as a method of waste treatment.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

HGK 8/68

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: The R. T. French Company
Shelley, Idaho

TITLE OF PROJECT: "Aerobic Secondary Treatment of Potato Processing Wastes with Mechancial Aeration"

PROJECT SITE: Shelley, Idaho

DATE AWARDED: Aug. 1967

FEDERAL GRANT: $483,217

TOTAL EST. PROJ. COST: $690,310

PROJECT NUMBER: WPRD 15-01-R1-67
12060 EHV

PPBS NO. 1206

DESCRIPTION OF PROJECT: This project is designed to demonstrate the effectiveness of an aerobic secondary treatment plant for treating the total flow of potato processing wastes (1 MGD and 14,580 lb. BOD). The aerobic treatment will follow an existing primary treatment plant.

The secondary treatment plant will consist of three earthen aeration basins equipped with mechancial surface aerators, a mechancially cleaned secondary clarifier, an aerobic digester, and sludge disposal beds. In addition, a silt removal system will be constructed, consisting of screening facilities, a pumping station, and two earthen ponds to retain silt accumulations for one processing season.

The aeration system will be tested under three operating schemes: 1.) as an extended aeration system in which biological sludge is returned to the aeration basin and the excess, to the digester; 2.) as a flow-through aeration basin with sludge carryover into the effluent; and 3.) as an intermittent aeration system in which the clarified upper portion of the aeration basin contents is discharged directly to the river. During these operations, studies will be made on the effects of foaming ice, temperature, pH, and nutrients on the efficiency of the process.

STATUS: Contracts for long lead items such as the aeration equipment and clarifiers to be awarded within thirty days. Final design and specifications for construction of the treatment facility to be completed on or about May 1, 1968.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: FMC Corporation

TITLE OF PROJECT: "Cannery Waste Treatment by the Kehr Activated Sludge Process"

PROJECT SITE: Santa Clara, California

DATE AWARDED: December, 1966

FEDERAL GRANT: $29,300

TOTAL EST. PROJ. COST: $43,200

PROJECT NUMBER: WPRD 18-01-67
12060 EZP

PPBS NO. 1206

DESCRIPTION OF PROJECT: The Kehr Process, in essence, involves a combining of activated sludge aeration of 10,000 to 15,000 mg/l mixed liquor solids with aerobic digestion in a single aeration tank. This provides high removals of BOD, solids, and nutrients; facility for periodic high strength wastes; a stabilized, drainable water sludge; and comparatively low physical plant costs.

The objectives are to:

1. Demonstrate the revised Kehr Process using liquid-solids separation by high-rate flotation-densification system of activated sludge solids.

2. Demonstrate effectiveness of the process for treating cannery wastes combined with domestic sewage having a BOD_5 of 1000 to 2000 mg/l.

3. Demonstrate performance of the process with densified return sludge solids of 4% to 8% on a dry weight basis, thus affecting plant economy by use of smaller tankage volume.

4. Determine processing requirements for application to a full-scale treatment plant.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Minute Maid Company
Orlando, Florida

TITLE OF PROJECT: "Removal of Organics and Nutrients from Citrus Processing Plant Wastes"

PROJECT SITE: Leesburg and Auburndale Florida

DATE AWARDED: December 1966

FEDERAL GRANT: $350,000

TOTAL EST. PROJ. COST: $550,000

PROJECT NUMBER: WPRD 38-01-67

PPBS NO. 1206

DESCRIPTION OF PROJECT:

In Florida, about 52 plants of the citrus industry discharge about 130 mgd of waste, having an organic concentration amounting to 318,000 lbs. of BOD daily, into streams and lakes of Florida. This project is a step towards solving this pollution problem.

The objective of this project is to demonstrate the design and operational factors for organic and nutrient removal of citrus process waste by the activated sludge process, by stabilization in oxidation ponds with and without induced aeration, and absorption of nutrients by plant life with subsequent drying of materials in citrus feed mill.

STATUS: Bids have been reviewed, selected, and contract awarded for construction of treatment facility at Auburndale. At Leesburg, the site is operational and worthwhile information being collected on mixed municipal and citrus processing wastes by the activated sludge system.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Beet Sugar Development Foundation

TITLE OF PROJECT: "Concentration of Sugar Beet Wastes for Economic Treatment with Biological Systems"

PROJECT SITE: Fort Collins, Colorado

DATE AWARDED: December, 1966

FEDERAL GRANT: $102,000

TOTAL EST. PROJ. COST: $372,500

PROJECT NUMBER: WPRD 43-01-67
12060 FAK

PPBS NO. 1206

DESCRIPTION OF PROJECT: The project is one phase of research to find an economic chemical or biological system to treat high volumes of sugar beet factory waste. One or more successful processes are necessary to satisfy effluent standards in States where sugar beets are processed.

The objective of the project is to concentrate sugar-beet factory wastes by chemical precipitation and reuse of the decanted solution in a closed recirculation system. The excess water accumulated during the operation will be treated by anaerobic and/or aerobic processes to remove BOD prior to discharge. The bioactivity will be studied concurrently.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: North Star Research & Development Institute
3100 38th Avenue South
Minneapolis, Minnesota 55406

TITLE OF PROJECT: Use of Fungi Imperfecti in Waste Control

PROJECT SITE: Minneapolis, Minnesota

DATE AWARDED: Sept. 1, 1967

FEDERAL GRANT: $76,585

TOTAL EST. PROJ. COST: $118,585

PROJECT NUMBER: WPRD 49-01-68
12060 EHT

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this 2 year project is to evaluate rapidly growing fungi strains for use in biological waste treatment processes applicable to waste streams from soybean and corn processing operations.

Synthesized mycelium will be evaluated for use as animal and/or human dietary supplement.

Parameters for industrial scale-up to accomodate a 1-3 mgd process operation will be determined based on results from a 50 gpd pilot plant operating on a continuous culture and flow basis.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

HGK 8/68

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: John Morrell & Company
Ottumwa, Iowa 52501

TITLE OF PROJECT: "Construction and Study of a Demonstration Plant Utilizing the Aerobic Channel Method for Treating Packinghouse Wastes"

PROJECT SITE: Ottumwa, Iowa

DATE AWARDED: December 1966

FEDERAL GRANT: $489,000

TOTAL EST. PROJ. COST: $815,000

PROJECT NUMBER: WPRD-54-01-67
12060 EUB

PPBS NO. 1206

DESCRIPTION OF PROJECT: Four oxidation channels will be constructed to handle an equivalent load of 20,000 lbs. of BOD/day from a packinghouse on a 7-day basis with estimated flow of 3.5 mgd. The objective is to find an efficient, effective, and economical method of treating raw packinghouse wastes so they can be discharged directly into streams.

Each channel will be 460 ft. X 60 ft. with a capacity of 150,000 cu. ft. Channels 1&2 will receive raw wastewater from existing primary treatment systems. The overflow will be directed into Channels 3&4 which will be operated intermittently as aerator and settling basins. Channel 4 will allow the sludge to be returned to Channels 1&2 or removed for harvesting. The solids removed will be centrifuged or evaporated and dried.

The most feasible way of handling solids will be determined. Tests will be conducted to determine if the dried solids can be used an an animal-food supplement.

The process will be designed to give variable rates of aeration and flow to obtain maximum bio-chemical oxygen demand and nitrogen removal. The flow will be sampled and analyzed for total nitrogen, chemical oxygen demand, suspended solids, total solids, and grease; weekly samples will be tested for total volatile solids, total fixed solids, phosphate, total bacterial content, and coliform count.

STATUS: Final design and specifications for the treatment facility have been completed. Expect to advertise for bids no latter than April 15,1968 and begin construction during May 1968.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Vahlsing, Inc.
Easton, Maine

TITLE OF PROJECT: "Treatment of Alkaline Wastes from Potato Processing"

PROJECT SITE: Easton, Maine

DATE AWARDED: December 1966

FEDERAL GRANT: $196,014

TOTAL EST. PROJ. COST: $280,020

PROJECT NUMBER: WPRD 56-01-67
12060 FAG

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objectives of this project are to demonstrate the feasibility of; treating potato processing waste using the activated sludge system ; combining potato processing waste with sugar beet refining waste; and the feasibility of three in-plant closed waste water systems in the sugar beet plant.

The project will provide extremely valuable data to both the potato processing and beet sugar industry. The aim is also to determine if a $30 million industrial complex, composed of potato and sugar beet processing and a residential community, can exist on a small stream, as is proposed, and have clean water.

STATUS: Expect to receive final design and specifications for construction of the 600 gpm pilot scale activated sludge system, and proceed with advertisement thereof April 1, 1968, construction to begin shortly after May 1, 1968.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Indiana Ave. N.W.~~
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Snokist Growers (formerly Blue Ribbon-Big Y Growers)
Yakima, Washington

TITLE OF PROJECT: "Pollution Prevention by Aeration of Fruit Processing Wastes."

PROJECT SITE: Yakima, Washington

DATE AWARDED: August 1967

FEDERAL GRANT: $347,669

TOTAL EST. PROJ. COST: $572,262

PROJECT NUMBER: WPRD 58-01-68
12060 FAD

PPBS NO. 1206

DESCRIPTION OF PROJECT: The cannery now discharges it fruit-processing wastes into the Yakima River. The objective of this project is to determine the most economical method of removing 90% of the BOD from an expected flow of 2.6 MGD with a BOD_5 loading of 20,000 lbs.

Aeration methods, including modifications to the activated sludge process, will be tested on a plant-size scale to determine their effectiveness in treating fruit processing wastes.

Existing and specially designed new facilities, including lagoons and clarifiers, will be used in prototype studies of the effects of varying amounts of aeration, waste loadings, waste detention, sludge returns, and chemical on the BOD level.

During the 1967 canning season, the lagoon and clarifier will be operated as a completely mixed activated-sludge facility. The new lagoon, with added aerators will operated as an aeration lagoon with no sludge return, each under varied loadings. During the 1968 canning season the facilities will be operated as a modified contact stabilization facility.

Information on the modifications will be compared and the results will be applied to the activated sludge process for use by industry and government as method for the biological treatment offruit processing wastes.

STATUS: Aeration basin completed and operational. Contracts being awarded for balance of construction. Facility to be completely operational by September 1968.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: National Canners Association Research Foundation
1133 20th Street, N. W.
Washington, D. C. 20036

TITLE OF PROJECT: "Reconditioning and Reuse of Food Processing Brines"

PROJECT SITE: Central Valley, Calif.
DATE AWARDED: February 1, 1968

FEDERAL GRANT: $31,500
TOTAL EST. PROJ. COST: $45,000

PROJECT NUMBER: WPRD-134-01-68
12060 EHU
PPBS NO. 1206

DESCRIPTION OF PROJECT: Briefly the proposal is to conduct a pilot scale study to determine the feasibility of re-using spent brines from storage and processing operations in olive packing by reconditioning the brine through a charcoal absorption and filtration column. The portable filter will be operated throughout the duration of the two year project at each of four locations in the California Central Valley area.

The supporting collection, reduction and analysis of data will be directed toward eliminating the present tie-in to municipal sewage system as well as lagoon systems used by olive processors and develop economic and effectiveness data for full scale development.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

TITLE OF PROJECT: "Integrated Treatment of Liquid Wastes from Food Canning Operations"

PROJECT SITE: San Jose, California **DATE AWARDED:** 2/14/68

FEDERAL GRANT: $33,330 **TOTAL EST. PROJ. COST:** $55,120

PROJECT NUMBER: WPRD 151-01-68 **PPBS NO.** 1206

DESCRIPTION OF PROJECT: The objectives of this proposal are as follows: (1) to determine the feasibility of employing a high rate trickling filter in the San Jose, California canning plant to treat strong organic wastes encountered in vegetable and fruit processing operations, which although low in volume (approx. 20% of total), contribute as much as 60% to the total BOD load. The filter will be 14 ft. in diameter and 21.5 ft. high, employing synthetic media and operating in a range between 100 and 200 gpm. It will be subjected to variations in flow, pH control and nutrient addition to determine its optimun working parameters. (2) To determine the effectiveness of using an air flotation process with and without addition of flocculants in removing suspended solids prior to secondary treatment. (3) To evaluate center discharge solids separation techniques and its effect on the total BOD content.

A study will also be made of the usage of edible acids as a bacteriostatic agent to prevent growth in recirculated flume water. Following the one year testing operation, it is proposed to select units to be incorporated in full scale plant operations for a further demonstration project. The reason for the low project cost is due to NCA already having on hand several pieces of equipment required to test these processes.

STATUS: Received worthwhile information on operation of units during last fall's processing operations. Will continue with evaluation of the various units this fall.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~*800 Indiana Ave. N.W.*~~
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Winter Garden Citrus Products Cooperative
P. O. Box 399
Winter Garden, Florida

TITLE OF PROJECT: "Lime Treatment and Inplant Reuse of an Activated Sludge Plant Effluent in the Citrus Processing Industry

PROJECT SITE: Winter Garden, Florida **DATE AWARDED:** March 22, 1968

FEDERAL GRANT: $165,000 **TOTAL EST. PROJ. COST:** $397,300

PROJECT NUMBER: WPRD-161-DI-(R-2)-68 **PPBS NO.** 1206
12060 EZY

DESCRIPTION OF PROJECT: The objective of this proposal will be to develop operational parameters and conduct an economic evaluation on lime treatment of effluent from a 2 mgd. activated sludge system treating citrus wastes and in-plant reuse of the lime treatment effluent. This study will cover lime treatment, with the addition of coagulant aids, and dewatering of sludges by centrifugation for usage in cattle feed preparation. Determination will be made on this system's effective in further reducing BOD, COD, and nutrients found in the activated sludge effluent.

The proposed project intends to demonstrate the effectiveness of lime precipitation on effluent from a 2 mgd. activated sludge system treating citrus wastes. The activated sludge system consists of an aeration pond providing from 24 to 36 hours detention time with the overflow being directed into a final clarifier. Operation of the activated sludge system will afford pH control along with nutrient supplementation and sludge recirculation.

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]*W.*
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Swift and Company
R&D Center
1919 Swift Drive
Oak Brook, Illinois 60521

TITLE OF PROJECT: "Removal and Recovery of Fatty Materials from Edible Fat and Oil Refinery Effluents"

PROJECT SITE: Bradley, Illinois **DATE AWARDED:** JUL 16 [illegible]

FEDERAL GRANT: $249,307 **TOTAL EST. PROJ. COST:** $389,970

PROJECT NUMBER: WPRD-185-01-(R-1)-68 **PPBS NO.** 1206
12060 DQV

DESCRIPTION OF PROJECT:

The 18 month study to be conducted at the Swift and Company Bradley Refinery plant will have as its main objectives to demonstrate the effectiveness and economics of employing air flotation for the removal and recovery of fatty material present in water eminating from processing operations.

In addition to an extensive study of flocculating agents, a complete characterization of processing waste streams is planned. Laboratory analysis will include BOD, COD, ether solubles and suspended solids determinations, etc.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

HGK:5/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Dairy Research and Development Corporation

TITLE OF PROJECT: "Elimination of Pollution by and Utilization of Protein Concentrates (Dried Whey) from Milk Residues of Cheese Making"

PROJECT SITE: Remsen, New York

DATE AWARDED: December 19, 1968

FEDERAL GRANT: $ 551,350

TOTAL EST. PROJ. COST: $4,234,071

PROJECT NUMBER: WPRD-219-01-R1
12060 DEQ

PPBS NO. 1206

DESCRIPTION OF PROJECT: A development and full scale demonstration for a process for the conversion of dairy whey into saleable food products by evaporation and spray drying methods. The conversion of whey to a useable food product in lieu of its disposal as a waste product from cheese manufacturing is the pollution abatement method to be developed and demonstrated. Research will be conducted on the use of dried whey as a supplement to various food products.

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Corn Products Company
Corporate Engineering
P.O. Box 345
Argo, Illinois 60501

TITLE OF PROJECT: "Treatment of Wastes from the Wet-Milling Industry"

PROJECT SITE: Pekin, Illinois

DATE AWARDED: July 24, 1968

FEDERAL GRANT: $482,680

TOTAL EST. PROJ. COST: $2,656,400

PROJECT NUMBER: WPRD-221-01-(R-1)-68
12060 DPE

PPBS NO. 1206

DESCRIPTION OF PROJECT: The 3½ year project entails the design, construction, operation, and an economic and technical evaluation of a 1 mgd completely mixed aerobic system for treatment of corn refining wastes.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET---

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Oklahoma Research Institute
1808 Newton Drive
Norman, Oklahoma 73069

TITLE OF PROJECT: "Demonstration of a Full Scale Waste Treatment System for a Cannery"

PROJECT SITE: Stilwell, Oklahoma

DATE AWARDED: JUL 25 1968

FEDERAL GRANT: $75,226

TOTAL EST. PROJ. COST: $117,807

PROJECT NUMBER: WPRD-230-01-(R-1) 68
12060 DSB

PPBS NO. 1206

DESCRIPTION OF PROJECT: The objectives of this 18 month study will be to conduct an economic and technical evaluation of a 1.5 mgd biological system employing a combination of both the minimal solids and extended aeration techniques to treat high strength, nutritionally unbalanced cannery wastes.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Ave. N.W.~~
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Farmbest, Inc.
Denison, Iowa

TITLE OF PROJECT: Waste Treatment Facility, Farmbest, Inc., Denison, Iowa

PROJECT SITE: Denison, Iowa

DATE AWARDED: October 5, 1968

FEDERAL GRANT: $289,790

TOTAL EST. PROJ. COST: $755,587

PROJECT NUMBER: WPRD 241-01-68
12060 DFF

PPBS NO. 1206

DESCRIPTION OF PROJECT:

This is a 15 month project to demonstrate, over one full year of operation, the application of anaerobic lagoons and two-stage trickling filters for the treatment of strong wastes resulting from the slaughtering and processing of hogs. This plant kills about 5000 hogs daily and waste flows average about 0.85 mgd. Data will be collected on the strength of wastes and the efficiency of individual treatment units under various loadings and weather conditions so the results can be projected for new plants using any combinations of these treatment units.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET

June 3, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
National Canners Association, Research Foundation
1133 20th Street, N.W.
Washington, D. C. 20036

PROJECT DIRECTOR: (Name and Address)
Mr. Walter Mercer, NCA Western Research Laboratory
1950 Sixth Street
Berkeley, California 94710

TITLE OF PROJECT: "Evaluation of Controlled Temperature and Forced Aeration in Trickling Filter Treatment of Food Canning Waste Waters"

PROJECT SITE: San Jose, California

PROGRAM (PROJECT) NUMBER: 12060 EAE

DATE OFFERED: May 15, 1969

DATE ACCEPTED (AWARDED): June 10, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: May 15, 1969 Thru: Nov. 15, 1969	$ 28,712	$ 18,350

DESCRIPTION OF PROJECT: The objectives of this project to be conducted at the DelMonte Corporation Plant No. 3 at San Jose, California are as follows:

1. To evaluate the performance and BOD reduction capacity on high strength liquid canning wastes of a 10,000 gpd trickling filter unit containing such special features as forced aeration and temperature control of the treatment column preceeded by grinding and screening components.
2. To compare the efficiency of this unit with that of the trickling filter without temperature control and forced aeration operated under WPRD 151-01-68, by subjecting them both to identical loadings eminating from the same waste source.
3. To incorporate the results of this evaluation into the design of a full scale demonstration project to be implemented in 1970. The six month project is an extension of work initiated under WPRD 251-01-68.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

6/16/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Gold Kist Poultry Division
Cotton Producers Association
P. O. Box 2210
Atlanta, Georgia 30301

PROJECT DIRECTOR: (Name and Address)
Byron Hawkins
Gold Kist Poultry
910 Latta Street
Durham, N.C. 27704

TITLE OF PROJECT: "Water and Waste Management in Poultry Processing"

PROJECT SITE:
Gold Kist Poultry
910 Latta Street
Durham, N.C.

PROGRAM (PROJECT) NUMBER: 12060 EGV

DATE OFFERED: June 12, 1969

DATE ACCEPTED (AWARDED): June 26, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/71	$ 283,381	$198,366

DESCRIPTION OF PROJECT:

The University of North Carolina will conduct a two year study which involves changes in the Gold Kist processing operations for demonstration of effective in-plant control of both water use and discharge of effluent from poultry processing. The project encompasses water use and waste abatement throughout the plant, from water intake through final waste-water collection and control.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

7/10/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Western Potato Service, Inc.
P. O. Box 1391 Highway #2 West
Grand Forks, North Dakota 58201

PROJECT DIRECTOR: (Name and Address)
James L. Martin
Potato Service, Inc.
P. O. Box 809
Presque Isle, Maine 04769

TITLE OF PROJECT: "Full Scale Demonstration and Evaluation of Potato Dry and Wet Caustic Peeling Processes"

PROJECT SITE:
Presque Isle Maine (Wet)
Grand Forks, North Dakota (Dry)

PROGRAM (PROJECT) NUMBER: 12060 EIG

DATE OFFERED: 7/1/69

DATE ACCEPTED (AWARDED): July 22, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 1/1/71	$1.042.212	$396.574

DESCRIPTION OF PROJECT:

The objective of this grant will be to demonstrate at full scale the economics and pollution reduction characteristics of a potato "dry" caustic peeling system and use as a base for comparison data to be obtained from a similar facility employing the conventional "wet" caustic peeling operation.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

August 18, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Crowley's Milk Company, Inc.
145 Conklin Avenue
Binghamton, N.Y. 13902

PROJECT DIRECTOR: (Name and Address) Dr. Robert R. Zall
Director of Research & Production
Crowley's Milk Company, Inc.
145 Conklin Avenue
Binghamton, N. Y. 13902

TITLE OF PROJECT: "Development and Demonstration of an Ultrafiltration Plant for the Abatement of Pollution from Cottage Cheese Whey"

PROJECT SITE: Ph. 1 Binghamton, New York

PROGRAM (PROJECT) NUMBER: 12060 DXF

DATE OFFERED: August 8, 1969

DATE ACCEPTED (AWARDED): Sept. 3, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 1/1/72	$914,081	$495,856

DESCRIPTION OF PROJECT:

A two stage Ultrafiltration system for the separation and concentration of protein and lactose or straight acid whey concentration with a resulting influent BOD reduction of 99% will be demonstrated. The first phase, lasting 13 months, calls for the design, detailed engineering, construction, operation and evaluation in Binghamton, N. Y. of a 10,000 lb/day UF system and will include the design of a 250,000 lb/day system for full scale demonstration under phase II. Duration of phase II will be 17 months.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

September 10, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant under Section 6B, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Green Giant Company
LeSueur, Minnesota 56058

PROJECT DIRECTOR: (Name and Address)
Dr. E. E. Erickson
North Star Research & Development Inst.
3100 38th Avenue
Minneapolis, Minnesota 55406

TITLE OF PROJECT: Pilot Plant Installation for Use of Fungi Imperfecti on Vegetable Wastes

PROJECT SITE:
North Star Research & Development Institute
Minneapolis, Minnesota

PROGRAM (PROJECT) NUMBER: 12060 EDZ

DATE OFFERED: September 1, 1969

DATE ACCEPTED (AWARDED): Sept. 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 12/31/70	$72,860	$49,742

DESCRIPTION OF PROJECT: To demonstrate and evaluate on a pilot scale basis the use of fungi imperfecti as a biological agent in a aerated treatment system which treats high BOD vegetable processing wastes. According to bench scale tests the fungi are capable of removing organic nutrients with a related BOD reduction in excess of 98% with a 20 hour residence time. An aerated lagoon and aerated ditch will be employed to evaluate the fungi as a system component and the related operational and system characteristics will be defined.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

September 22, 1969
Date to be announced

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This project is a Demonstration grant under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (name and address)
Kent Cheese Company
1931 North 15th Avenue
Melrose Park, Illinois 60160

PROJECT DIRECTOR: (name and address)
Allen E. Fehr
626 West South Street
Freeport, Illinois 61032

TITLE OF PROJECT: "Kent Cheese Company - Waste Treatment Facility"

PROJECT SITE: Kent, Illinois

PROGRAM (PROJECT) NUMBER: 12060 EKQ

DATE OFFERED: September 11, 1969

DATE ACCEPTED (AWARDED): Sept. 26, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 11/1/70	$65,722.80	$46,006.00

DESCRIPTION OF PROJECT:

Demonstrate the effectiveness of aerated lagoons for the treatment of cheese whey process rinse water and permeate from a whey reverse osmosis unit. The treatment system will utilize two aerobic lagoons inseries with submerged mechanical aeration equipment producing an extended aeration process. Data will be collected to allow evaluation of the extented aeration process to cheese whey waste flows.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

1406

10/6/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration, under Section 6B, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Illinois Packing Company
911 West 37th Place
Chicago, Illinois 60609

PROJECT DIRECTOR: (Name and Address)
Roy J. Ricci, Procedyne Corp.; 221 Somerset St.
New Brunswick, N.J. 08903

TITLE OF PROJECT: A Method of Manure Disposal for a Beef Packing Operation

PROJECT SITE: Illinois Packing Co.

PROGRAM (PROJECT) NUMBER: 12060 EOF

DATE OFFERED: Sept. 24, 1969

DATE ACCEPTED (AWARDED): Oct. 22, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/22/69 Thru: 6/21/71	$ 156,000	$ 93,400

DESCRIPTION OF PROJECT:

A twenty month project to demonstrate the feasibility of the incineration of cattle paunch and ground manure. The project objectives will include the following:

To segregate existing process waste streams for concentration of waste solids.
To develop physical parameters for process waste streams.
To design and construct a fluidized bed incineration unit.
To investigate and document the treatment system performance, the economics, optimal operating characteristics and the significance of the system in terms of application to other segments of the animal production industry.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

140c

INFORMATION SHEET

December 1, 1969
Date [illegible]

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Widmer's Wine Cellars, Inc.
Naples, New York 14512

PROJECT DIRECTOR: (Name and Address)
Edwin Haynes
Widmer's Wine Cellars, Inc.
Naples, New York 14512

TITLE OF PROJECT: Winery Wastewater-Characterization and Treatment

PROJECT SITE: Naples, New York

PROGRAM (PROJECT) NUMBER: 12060 EUZ

DATE OFFERED: November 20, 1969

DATE ACCEPTED (AWARDED): Dec. 18, 1969

Grant or Contract Period	Eligible Grant Period Costs	[illegible] or Contract [illegible]
From: 12/18/69 26 months Thru: 2/17/72	$284,000	148,900

DESCRIPTION OF PROJECT:

This project includes design, construction and operation of an extended aeration waste treatment plant to treat the process wastewaters from a winery.

The activities of the project are to characterize the winery wasteflow; design, construct and operate an extended aeration waste treatment system; study and document the treatment system, optimize the system; and determine the effectiveness of nutrient addition to the operation of the system.

The facility will be designed for a 120,000 gpd flow.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. [illegible]

140 d

INFORMATION SHEET

December 4, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
National Canners Association
Research Foundation
1133 20th Street
Washington, D.C. 20036

PROJECT DIRECTOR: (Name and Address)
Jack W. Ralls
National Canners Association
1950 Sixth Street
Berkeley, California 94710

TITLE OF PROJECT: Reduction of Salt Content of Food Processing Liquid Waste Effluent

PROJECT SITE: Berkeley, California

PROGRAM (PROJECT) NUMBER: 12060 DXL

DATE OFFERED: November 24, 1969

DATE ACCEPTED (AWARDED): Dec. 8, 1969

Grant or Contract Period	Eligible Grant Period Costs	[illegible]
From: 12/8/69 12 month Thru: 12/7/70	$94,208	$64,382

DESCRIPTION OF PROJECT:

The project will demonstrate the effectiveness of an ion exchange system for the treatment of olive brine waste water. The 10,000 gpd pilot unit will use calcium hydroxide as a resin regenerant and will be operated jointly by the National Canners Association and Aqua Ion Corporation. The operating parameters of the system will be established and scale up factors determined. It is anticipated that the degree of treatment will encourage the olive industry to consider water reuse and product recovery when full scale installations are considered.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
[illegible]

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INFORMATION SHEET

DEC 3 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Beefland International, Inc.
Council Bluffs, Iowa 51501

PROJECT DIRECTOR: (Name and Address)
Ray Burke, Vice President
Beefland International, Inc.
Council Bluffs, Iowa 51501
(712) 328-3941

TITLE OF PROJECT: "Elimination of Water Pollution by Packing House Animal Paunch and Blood"

PROJECT SITE: Council Bluffs, Iowa

PROGRAM (PROJECT) NUMBER: 12060 FDS

DATE OFFERED: Nov. 25, 1969

DATE ACCEPTED (AWARDED): Dec. 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Nov. 10, 69 Thru: May 10, 71	$ 367,870	$ 161,398

DESCRIPTION OF PROJECT:

This 18 month project will demonstrate the economic and technical feasibility of completely segregating blood and paunch from slaughterhouse operations and converting these materials into animal feed ingredients. Two dehydrators will be installed at Beefland International, Inc. and utilized to process the material generated from anticipated cattle kills of 250 head per hour.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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PPB 1207

MACHINERY & TRANSPORTATION EQUIPMENT

WP	12070 Letters	To	GPO	PM
WPD				
117		Johns Hopkins Univ.-Renn	H. Snyder	E. Dulaney

WPRD	12070 Letters	To	GPO	PM

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: The Johns-Hopkins University, Dr. Charles E. Renn
Department of Environmental Engineering Science
Baltimore, Maryland 21218

TITLE OF PROJECT: Management of Recycled Waste-Process Water Ponds

PROJECT SITE: Hampstead, Maryland

DATE AWARDED: December 1, 1967

FEDERAL GRANT: $39,627.00

TOTAL EST. PROJ. COST: $180,921

PROJECT NUMBER: WPD 117-03

PPBS NO. 1207

DESCRIPTION OF PROJECT:

Grant Period: 12 months

The purpose of this project is to develop detailed information on the operational techniques required to permit the utilization of a limited supply of treated domestic wastewaters for a variety of manufacturing processes. Requirements for control of biological processes in wastewaters impounded and recycled extensively within manufacturing processes and operations is being investigated.

The project is being conducted at the Black and Decker Manufacturing Companys' Hampstead, Md. plant. Operations in the plant involve stamping, pressing, punching, grinding, forging, assembly, and performance testing in a controlled environment requiring 2600 tons of refrigeration for air conditioning during the warm months. The water supply from wells is very limited. Domestic wastewaters are treated and routed to a nine acre impoundment for recirculation through the plant processes and operations. A "no-additional-cost" time extension has been requested to permit further evaluation through another summer season.

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

ELD 3/69

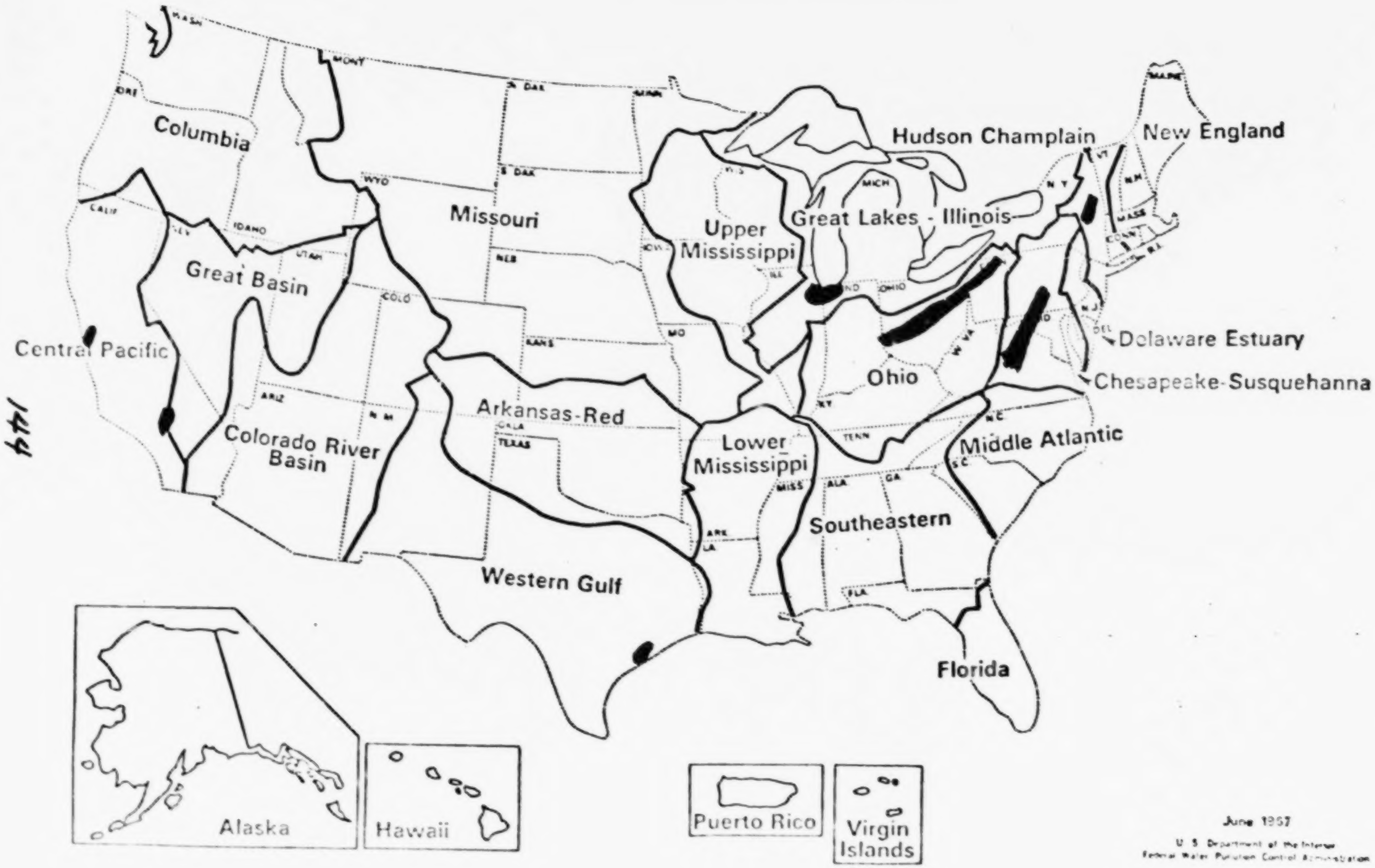
PPB 1208

STONE, CLAY & GLASS PRODUCTS

WP	12080 Letters	To	GPO	PM

WPRD	12080 Letters	To	GPO	PM
87		Johns-Manville Products Corp.	R. Christensen	E. Dulaney

LOCATION OF HYDRAULIC CEMENT INDUSTRY
PPB 1208: Stone, Clay, Glas Products


Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Ohio
Delaware Estuary
Chesapeake-Susquehanna
Middle Atlantic
Southeastern
Florida
Alaska
Hawaii
Puerto Rico
Virgin Islands
WASH
ORE
CALIF
IDAHO
NEV
UTAH
ARIZ
MONT
WYO
COLO
N M
N DAK
S DAK
NEB
KANS
OKLA
TEXAS
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June 1967

U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Johns-Manville Products Corporation
Manville, New Jersey

TITLE OF PROJECT: "Experimental Closed Water System to Eliminate Waste Water Discharge from Johns-Manville Plant No. 3."

PROJECT SITE: Defiance, Ohio

DATE AWARDED: September 1, 1967

FEDERAL GRANT: $82,350

TOTAL EST. PROJ. COST: $164,700

PROJECT NUMBER: WPRD 87-01-67
12080 EZF

PPBS NO. 1208

DESCRIPTION OF PROJECT:

This project is designed to demonstrate the effectiveness of a total process-water reuse system involving diatomite filtration to treat wastes from the production of glass fiber insulations and elements.

The objective of this project is to eliminate completely the discharge of phenolic waste water from the Johns-Manville Plant. The plant now discharges 30 to 50 gpm of waste water which eventually flows into the Maumee River. This river has been cited as one of the critically polluted rivers of the nation.

The waste water now contains glass fiber, caustic, and phenols. As a part of the project, all of the process waste water will be recirculated. The residual solids, consisting of glass fibers and phenolic binders, will be removed by screening and diatomite filtration. Caustic cleaning solutions will be segregated from the manufacturing process water, ponded, and treated as required for dumping or for return to plant process use.

PROGRESS TO MARCH 25, 1968: Approval to purchase certain long-lead items of equipment on low bids has been given with repayment subject to approval of the final plans and specifications. The final plans and specifications are complete except for theelectrical wiring and should be submitted for approval within two weeks.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

ELD:3/68

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PPB 1209

TEXTILE MILL PRODUCTS

WP	12090 Letters	To	GPO	PM
	ECU	N. Carolina State U.	H. Snyder	C. Ris
	ECS	Clemson U. - Porter	D. Hill	C. Ris
	EOX	Clemson U. - Porter	W. Garrison	C. Ris
	EOE	N. Carolina State U.-Bryan	H. Snyder	C. Ris

WPRD	Letters	To	GPO	PM
100	EUX	Fiber Industries	R. Thacker	C. Ris
216	ESG	American Enka Corp.	E. Lomasney	C. Ris
	DWM	C. H. Masland & Sons	D. Smith	C. Ris
	EQO	Palisades Industries		C. Ris
	EGW	Holliston Mills	E. Lomasney	C. Ris

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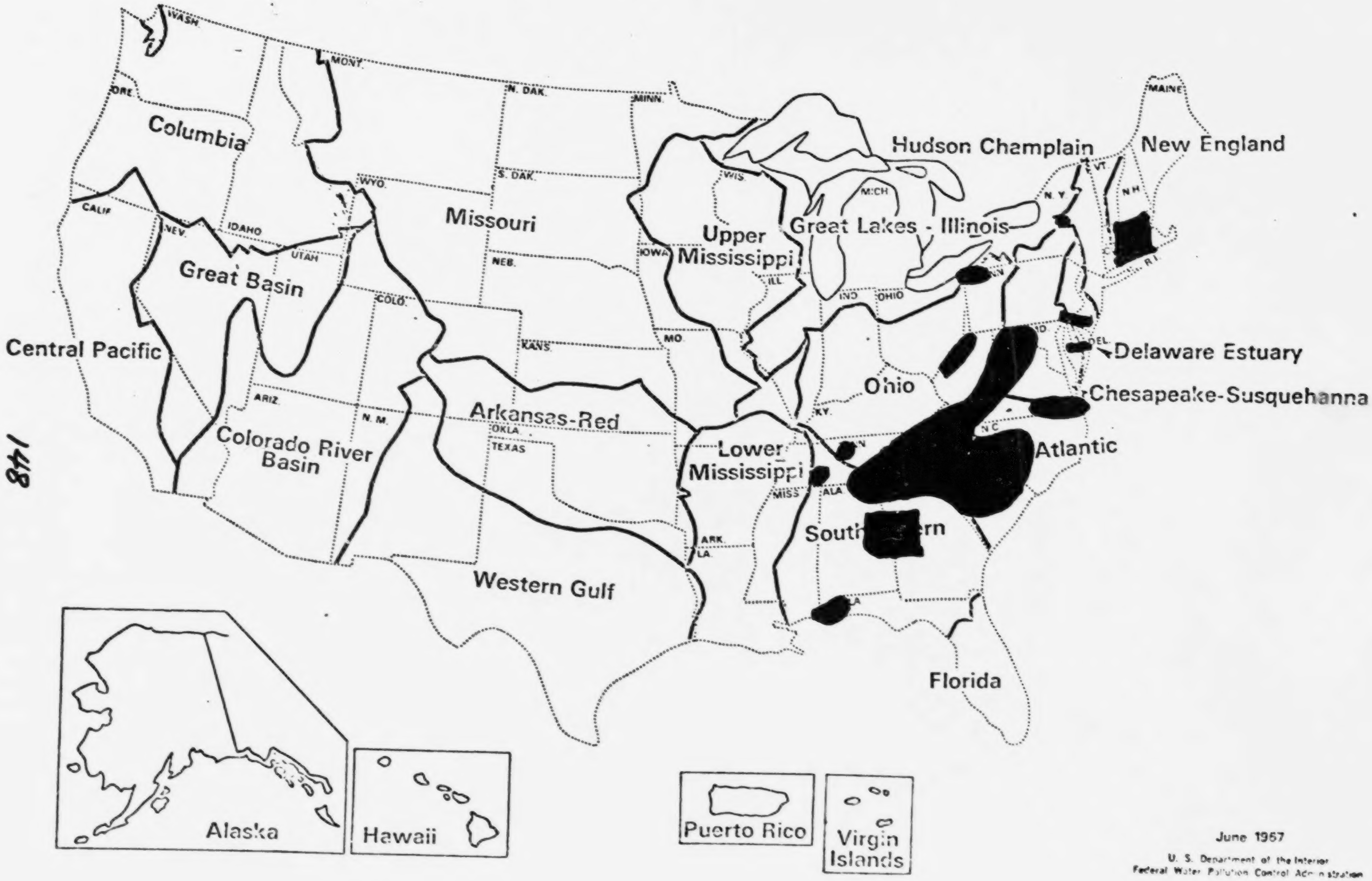
LOCATION OF MAJOR FIBER & FINISHING INDUSTRIES
PPB 1209: Textiles Mill Products


Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Ohio
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Atlantic
South ern
Florida
WASH.
ORE.
CALIF.
NEV.
IDAHO
MONT.
WYO.
UTAH
COLO.
ARIZ.
N. M.
N. DAK.
S. DAK.
NEB.
KANS.
OKLA.
TEXAS
MINN.
IOWA
MO.
ARK.
LA.
WIS.
ILL.
MICH.
IND.
OHIO
KY.
MISS.
ALA.
N.C.
N.Y.
VT.
N.H.
MAINE
R.I.
MD.
DEL.
Alaska
Hawaii
Puerto Rico
Virgin Islands

June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: North Carolina State University
Raleigh, North Carolina 27607

TITLE OF PROJECT: "Textile Based Water Pollution-Information Study"

PROJECT SITE: Raleigh, North Carolina **DATE AWARDED:** May 9, 1969

FEDERAL GRANT: $10,410 **TOTAL EST. PROJ. COST:** $12,638

PROJECT NUMBER: 12090 ECU **PPBS NO.** 1209

DESCRIPTION OF PROJECT:

Collection of, abstracting and indexing all available literature dealing with water pollution from textile based sources, and preparation and storage of this information into the Water Resources Scientific Information System. Correlate information between the Water Resources Scientific Information Center, USDI, the M.I.T. Textile Center and the Shirley Institute thesauri.

Project Duration: 8 months

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 of the, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Department of Textiles
School of IM & IS
Clemson University
Clemson, S.C. 29631

PROJECT DIRECTOR: (Name and Address)
Dr. John J. Porter

TITLE OF PROJECT: Survey of the State of the Art of Textile Waste Treatment

PROJECT SITE: Clemson University

PROGRAM (PROJECT) NUMBER: 12090 ECS

DATE OFFERED: June 20, 1969

DATE ACCEPTED (AWARDED): June 24, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: July 1, 1969 Thru: June 30, 1970	$31,675	$30,007

DESCRIPTION OF PROJECT: The study will include characterization of the liquid wastes from the major manufacturing processes as to composition and quantity per unit of production, identify successful and unsuccessful treatment processes and disposal practices presently in use, and suggest alternatives for least satisfactory practices. The study will be directed towards identifying areas most in need of research and those areas where research effort is most likely to yield beneficial results.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Department of Textiles; School of IM&TS; Clemson, University; Clemson, South Carolina 29631

PROJECT DIRECTOR: (Name and Address) Dr. John J. Porter, Department of Textiles
Clemson University, Clemson, South Carolina 29631

TITLE OF PROJECT: A Study of the Photochemical Degradation of Commercial Dyes

PROJECT SITE: Clemson University; Clemson, South Carolina

PROGRAM (PROJECT) NUMBER: 12090 EOX

DATE OFFERED: July 22, 1969

DATE ACCEPTED (AWARDED): August 20, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 8/1/69 Thru: 7/31/70	$34,040	$31,539

DESCRIPTION OF PROJECT:

The objectives of this 12 month research project are to define and characterize the products of decomposition resulting from ultraviolet radiation of selected commercial textile dyes. The characterization will include distinquishing between photochemical and hydrolytically produced decomposition products.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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INFORMATION SHEET

September 30, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Textile Chemistry, David Clark Laboratories, North Carolina State University, Raleigh, North Carolina 27607

PROJECT DIRECTOR: (Name and Address) Carl E. Bryan
Textile Chemistry Department, North Carolina State University,, Raleigh, North Carolina 27607

TITLE OF PROJECT: "Water Pollution Reduction Through Recovery of Desizing Wastes"

PROJECT SITE: North Carolina State University, Raleigh, North Carolina

PROGRAM (PROJECT) NUMBER: 12090 EOE

DATE OFFERED: September 17, 1969

DATE ACCEPTED (AWARDED): Oct. 6, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Thru:	$39,688	$ 35,833

DESCRIPTION OF PROJECT:

The objectives of the twelve month research program include the following:

(1) To investigate processes for the recovery of desizing wastes in solid or concentrated form, suitable for final disposal and to investigate processes for the recovery in a reusable form. The wastes studied will be those from fabrics sized with carboxymethy cellulose (CMC), polyvinyl alcohol (PVA), and starch.

(2) To obtain more complete data on biodegradation of synthetic warp sizes, CMC, PVA.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Fiber Industries, Inc.
Box 10038
Charlotte, North Carolina 28201

TITLE OF PROJECT: Reuse of Plant Effluent and Cooling Water Blowdown as Process Water.

PROJECT SITE: Shelby, North Carolina

DATE AWARDED: April 4, 1968

FEDERAL GRANT: $350,000

TOTAL EST. PROJ. COST: $500,000

PROJECT NUMBER: WPRD 100-01-68
12090 EUX

PPBS NO. 1209

DESCRIPTION OF PROJECT: An existing facility provides treatment for the combined sanitary and equalized chemical process waste waters from a synthetic fiber manufacturing plant. Treatment facilities consist of extended activated sludge aeration basins, clarifier, polishing ponds, an aerobic sludge digestion basin, and a sludge holding pond.

The project will evaluate treatability of this waste in a plastic media trickling filter, feasibility of algae removal from the polishing pond effluent by use of microscreen filters, feasibility of BOD, COD, color, odor and taste reduction in the final effluent by use of powdered carbon for the purpose of ultimate reuse of the effluent as process makeup water, and chromate reduction of cooling tower blowdown to permit treatment in the waste treatment plant.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

ELD 7/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: American Enka Corporation
Enka, North Carolina

TITLE OF PROJECT: "Zinc Precipitation and Recovery Plant"

PROJECT SITE: Enka, North Carolina **DATE AWARDED:** May 24, 1968

FEDERAL GRANT: $282,700 **TOTAL EST. PROJ. COST:** $980,417

PROJECT NUMBER: WPRD-216-01-(R-1)-68 **PPBS NO.** 1209
12090 ESG

DESCRIPTION OF PROJECT: The objectives of this 20 month full scale demonstration project to remove soluble zinc emitted from spin bath operations in the manufacture of viscose rayon are as follows:

1. To direct waste streams containing significant amounts of zinc into the existing 200 gpm chemical precipitation and recovery system.
2. Improve the quality of both the zinc sludge produced in the recovery system and the final effluent to enable their reuse in the manufacturing process.
3. Optimize the system.
4. Utilize the technology developed in the design, construction and operation of a new zinc precipitation and recovery system.

INQUIRIES: *Contact the*
Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: C.H. Masland & Sons
Carlisle, Pennsylvania 17013

TITLE OF PROJECT: Demonstration of a New Process for the Treatment of Textile Dyeing and Finishing Waste

PROJECT SITE: Wakefield, Rhode Island

DATE AWARDED: April 15, 1969

FEDERAL GRANT: $27,615

TOTAL EST. PROJ. COST: $39,450

PROJECT NUMBER: 12090 DWM

PPBS NO. 1209

DESCRIPTION OF PROJECT:

The applicant proposes to construct a pilot facility to treat the full flow (50,000 gpd) of process and primary treated sanitary wastes from their Wakefield, Rhode Island plant. The principle operations of the plant are wool and synthetic fiber dyeing and spinning of fibers into yarn. The Pilot Facility will employ a process developed by the Fram Corporation (patent pending) for the biological regeneration of an activated carbon absorption and filtration system. In operation, the wastewaters are pumped downflow through several granular carbon columns in series during the ten hour operating day. During the remainder of the day an activated sludge mixed liquor is pumped upflow through the columns.

The plan of operation provides for (a) effluent profile analysis (b) design, construction, operation, testing, and evaluation of the pilot facility (c) development of design criteria for a 1 to 1.5 mgd plant and (d) preparation of reports.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD 3/69

INFORMATION SHEET

September 25, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Palisades Industries, Inc.
2 Columbia Street
Peace Dale, Rhode Island 02883

PROJECT DIRECTOR: (Name and Address)
Calvin P.C. Poon
Department of Civil Engineering
University of Rhode Island
Kingston, Rhode Island

TITLE OF PROJECT: Demonstration of a New Process for the Treatment of High Pollutant Concentration Textile and Finishing Wastes

PROJECT SITE: Peace Dale, Rhode Island

PROGRAM (PROJECT) NUMBER: 12090 EQO

DATE OFFERED: September 15, 1969

DATE ACCEPTED (AWARDED): Oct. 3, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 9/1/69 Thru: 1/1/71	$ 143,750	$ 64,687

DESCRIPTION OF PROJECT:

To demonstrate the effectiveness of a pilot scale treatment system which would adequately treat a 50,000 gpd waste flow from a textile dye mill. The system consists of an aerated equalization basin, a anaerobic activated carbon unit, a aerobic activated carbon unit and a activated sludge regeneration unit.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

INFORMATION SHEET

November 13, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration, under Section 6B, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Holliston Mills, Inc.
111 Lenox Street
Norwood, Mass. 02060

PROJECT DIRECTOR: (Name and Address)
J.L. Young Jr.
P.O. Box 478
Kingsport, Tenn. 37662

TITLE OF PROJECT: Treatment of Cotton Textile Waste by Enzymes and High Rate Trickling Filter System

PROJECT SITE:
New Canton, Tennessee
P.O. Box 478; Kingsport, Tenn. 37662

PROGRAM (PROJECT) NUMBER: 12090 EGW

DATE OFFERED: OCT 31 1969

DATE ACCEPTED (AWARDED): Dec. 12, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 36 months Thru:	$ 285,372	$144,741

DESCRIPTION OF PROJECT:

The industry concerned purchases cotton greige goods and produces high grade book bindings. The manufacturing processes which produce a waste flow are desizing, caustic extraction, bleaching, dyeing, and sizing. The applicant proposes to substitute an enzyme desizing chemical in the desizing process which will reduce the pH and BOD load to the waste stream. A treatment system employing a primary clarifier, high rate trickling filter with plastic media and a secondary clarifier will be used to treat the waste flow. The sludge from the treatment system will then be subjected to an enzyme reaction which will render it amenable to further biological oxidation.

The effectiveness of the manufacturing process change, and the operating characteristics and efficiency of the trickling filter system and sludge handling system will be evaluated.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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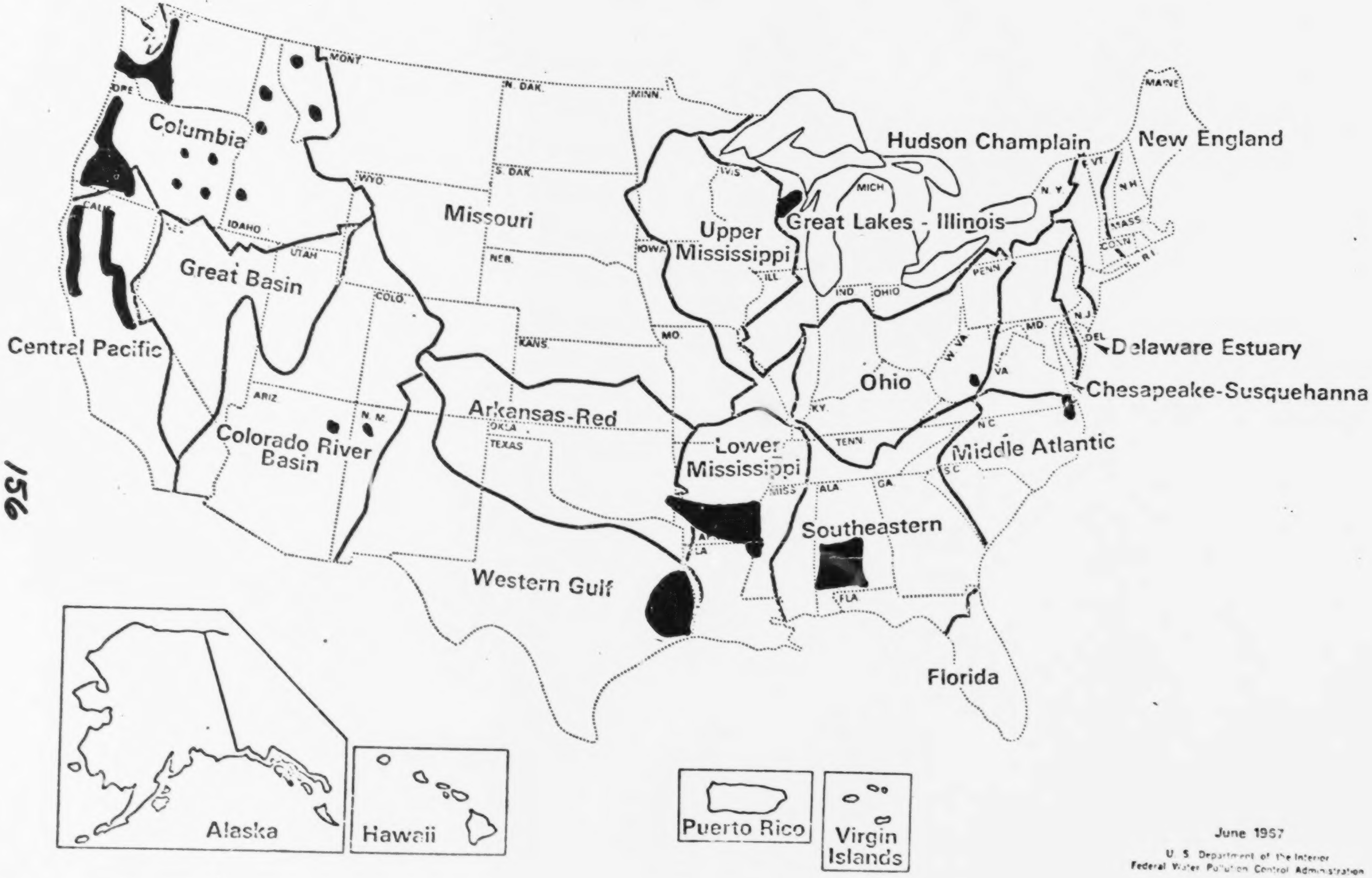
PPB 1210

LUMBER & WOOD PRODUCTS

WP	12100 Letters	To	GPO	PM
1320	EBG	Oregon St. Univ. Schaumburg	K. Willard	G. Webster

WPRD				
174		Klamath Plywood Corp.	K. Willard	G. Webster

LOCATION OF MAJOR SAW MILLS & PLANNING MILLS
PPB 1210: Lumber & Wood Products


Columbia
Central Pacific
Great Basin
Colorado River Basin
Missouri
Arkansas-Red
Western Gulf
Upper Mississippi
Lower Mississippi
Great Lakes - Illinois
Hudson Champlain
New England
Delaware Estuary
Chesapeake-Susquehanna
Ohio
Middle Atlantic
Southeastern
Florida
ORE
CALIF
IDAHO
MONT
WYO
UTAH
COLO
ARIZ
N. M.
N. DAK.
S. DAK.
NEB.
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S C
Alaska
Hawaii
Puerto Rico
Virgin Islands

June 1967
U. S. Department of the Interior
Federal Water Pollution Control Administration

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Oregon State University
Corvallis, Oregon 97331

TITLE OF PROJECT: "Influence of Log Rafting on Water Quality"

PROJECT SITE: Corvallis, Oregon and Vicinity

DATE AWARDED: May 15, 1969

FEDERAL GRANT: $20,557

TOTAL EST. PROJ. COST: $21,639-2nd yr.

PROJECT NUMBER: 12100 EBG
(Formerly WP-1320)

PPBS NO. 1210

DESCRIPTION OF PROJECT:

The major objectives of this project are to:

Determine the quantity and character of substances leached from logs while floating in water; determine the rate and extent at which leached substances are degraded biologically; determine debris under and in the vicinity of log rafting and storage areas; evaluate the rate and extent of aerobic and anerobic biodegradation of the benthol deposits; and determine the extent of log raft storage at selected locations in the Pacific Northwest and using data obtained from the above experiments evaluate the potential contribution of raft storage to water pollution in those areas.

INQUIRIES: *Contact the* Industrial Pollution Control Branch-DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

GRW 4/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Klamath Plywood Corporation
P. O. Box 1239
Klamath Falls, Oregon 97601

TITLE OF PROJECT:

"Aerobic Secondary Treatment of Plywood Glue Wastes"

PROJECT SITE: Klamath Falls, Oregon **DATE AWARDED:** APR 19 1968

FEDERAL GRANT: $42,028 **TOTAL EST. PROJ. COST:** $65,040

PROJECT NUMBER: WPRD 174-01-(R1)-68 **PPBS NO.** 1210

DESCRIPTION OF PROJECT:

The project objectives of this grant are to design, construct, operate and evaluate an extended aeration, activated sludge lagoon treatment plant on urea-formaldehyde glue wastes in order to provide data for others to utilize in efforts to abate water pollution.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D C. 20242

8/68

PPB 1212

OTHERS

WP	12120 Letters	To	GPO	PM
1535	ERC	Res. Fdn. - AWWA-Faber	W. Lacy	W. Lacy
	ESW	City of Gainsville, Fl.		C. Ris
WPD				
99	DOD	Renoselear Poly-Aulenbech	R. Keppler	G. Rey
185		U. of Cincinnati - Eye	E. Harris	G. Webster
199	DIK	U. of Virginia - Parker	H. Snyder	G. Webster
WPRD				
25	EFM	Caldwell Lace Leather Co.	J. Westrick	G. Webster
133		A. C. Lawrence Leather Co.	T. Murphy	G. Webster
232	DSG	S. B. Foot Tanning Co.	C. Oster	G. Webster

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Research Foundation, American Water Works Association.

TITLE OF PROJECT: Disposal of Wastes from Water Treatment Plants.

PROJECT SITE:	New York, N. Y.	**DATE AWARDED:**	July 25, 1968
FEDERAL GRANT:	$46,305	**TOTAL EST. PROJ. COST:**	$53,250
PROJECT NUMBER:	WP-1535-01-69 12120 ERC	**PPBS NO.**	1212

DESCRIPTION OF PROJECT:

Preparation of a "State of the Arts" report on current practices and costs of disposing of sludges generated by water treatment plants. The results of this 12 month project will be used to develop a program for research and development needs for these significant problems of solids addition to watercourses.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET

11/12/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 Research, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) City of Gainesville, Florida

PROJECT DIRECTOR: (Name and Address)
Mr. John R. Kelly, Director
Public Utilities
P. O. Box 490
Gainesville, Florida 32601

TITLE OF PROJECT: "Develop uses in water and waste treatment of $MgCO_3$ recovered from lime soda softening sludges"

PROJECT SITE: Gainesville, Florida

PROGRAM (PROJECT) NUMBER: 12120 ESW

DATE OFFERED: 11/12/69

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 11/1/69 Thru: 10/31/70	$27,554	$16,890

DESCRIPTION OF PROJECT:

The principal investigator has a modified process for the recovery of MgO from brucite or dolomite to the separation and essentially quantitative recovery of the $Mg(OH)2$ present in lime-soda softening sludges as very pure (99.7%) $MgCO_3$. This new process has been successfully tested on a pilot plant scale at Dayton, Ohio, for the past year and plans are now being made for the full-scale recovery of $MgCO3$ from the sludge produced by both of that city's softening plants.

Another improvement of the process makes it possible for each of the several cities and industrial plants softening hard surface waters containing clay turbidity to employ both lime recalcination and magnesium recovery. This will substantially reduce treatment costs and also substantially eliminate a major water pollution problem. Application of $MgCO_3$ as a coagulant to be studied include the following:

1. the removal of turbidity and organic color from soft surface waters.
2. from hard or alkaline surface or well waters.
3. flocculation or sewage and for many types of industrial wastes.
4. with synthetic organic anionic and cationic polymers in (1), (2) and (3) above.

NQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Rensselaer Polytechnic Institute
Research Division
Troy, New York 12181

TITLE OF PROJECT: "Removal of Syndets and Reclamation of Laundry Wastes"

PROJECT SITE: Troy, New York

DATE AWARDED: January 24, 1969

FEDERAL GRANT: $25,055

TOTAL EST. PROJ. COST: $53,090

PROJECT NUMBER: 12120 D0D

PPBS NO. 1212

DESCRIPTION OF PROJECT:

To optimize and evaluate the best process or combination of processes attainable for the treatment and recovery of laundromat wasterwaters. Two commercially available treatment systems for laundromat wastewaters are to be used in the optimization and evaluation project. The needs required to produce waste effluents suitable for discharge to New York State receiving waters, and the treatment requirements to produce reusable water for laundromats will be determined and demonstrated.

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Cincinnati
Professor J. David Eye

TITLE OF PROJECT: Treatment of Total Wastes from a Sole Leather Tannery

PROJECT SITE: Marlinton, West Virginia

DATE AWARDED: May 1, 1968

FEDERAL GRANT: $29,325 - 2nd year

TOTAL EST. PROJ. COST: $166,000

PROJECT NUMBER: WPD 185-02-68

PPBS NO. 1212

DESCRIPTION OF PROJECT: The basic objective of this project is the complete treatment of the total wastes stemming from a large sole leather tannery. During the first year the beamhouse waste fractions were effectively separated and pretreated. During the second year of this grant the pretreated beamhouse waste will be blended with spent tan liquor and then treated in a series of stratified anaerobic-aerobic lagoons.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

RN 6/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Virginia
Department of Civil Engineering
Charlottesville, Virginia 22903

TITLE OF PROJECT: An Anaerobic-Aerobic Lagoons for Treating Vegetable Tannins

PROJECT SITE: Luray, Virginia

DATE AWARDED: January 18, 1969 [redacted]

FEDERAL GRANT: $17,801

TOTAL EST. PROJ. COST: $68,500

PROJECT NUMBER: 12120 DIK

PPBS NO. 1212

DESCRIPTION OF PROJECT: The objective of this project is to demonstrate that the wastes from the bating, soaking, tanning, and bleaching processes in a vegetable tannery can be effectively treated by means of an anaerobic-aerobic lagoon. The wastes are to be equalized and combined prior to entering the lagoon. The lagoon is to be operated under varying conditions of aeration and BOD loading in order to determine optimum design parameters.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

GRW
1/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Caldwell Lace Leather Company

TITLE OF PROJECT: "Complete Treatment of Tannery Industrial Waste for Chrome Tanning, Alum Tanning, and Vegetable Tanning"

PROJECT SITE: Auburn, Kentucky

DATE AWARDED: December, 1966

FEDERAL GRANT: $46,340

TOTAL EST. PROJ. COST: $68,200

PROJECT NUMBER: WPRD 25-01-67
12120 EFM

PPBS NO. 1212

DESCRIPTION OF PROJECT: No completely satisfactory method has been devised for treating tannery industrial waste. Since tanneries use large volumes of water, containing organic and inorganic matter, suitable treatment methods must be found.

The objectives of the project are to demonstrate the feasibility of completely treating tannery waste from the only plant in U.S. that tans all three types of leather tannages - Chrome, Vegetable and Alum - and to obtain basic data to design full-scale treatment plants usable for any tannery.

The basic plan is to develop methods to pre-treat the three present leather tannages, to combine their streams, and to completely treat tannery industrial waste. The high alkaline content of beam house waste will be neutralized with high acid made up of various tannages. The organic solids will be reduced in an anaerobic-aerobic lagoon.

INQUIRIES: **Contact the** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

GW 1/67

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: A.C. Lawrence Leather Company, Division of Swift & Company, 10-18 Sawyer Street
Peabody, Massachusetts

TITLE OF PROJECT: "Wastewater Treatment Pilot Plant Investigation, Mixed Chrome Tannery Wastewater"

PROJECT SITE: South Paris, Maine **DATE AWARDED:** 8/30/67

FEDERAL GRANT: $87,215 **TOTAL EST. PROJ. COST:** $124,593

PROJECT NUMBER: WPRD-133-01-68 **PPBS NO.** 1212

DESCRIPTION OF PROJECT: The objectives of the project are as follows:

1) To demonstrate on a pilot plant scale the primary and secondary treatment, by the activated sludge process, of mixed chrome tannery wastewaters and sanitary sewage.
2) To demonstrate the pre-treatment of the tannery wastewater by carbonation with flue-gas and up-flow sedimentation in order to remove excess calcium, chromium, and sulfides.
3) To demonstrate the benefits of mixing municipal sanitary sewage with tannery wastewaters to provide the biological nutrients lacking in tannery wastes.
4) To determine design criteria for a scale up to a full scale demonstration plant and to provide a basis for estimating the costs of construction and operation of a full scale plant.
5) To determine optimum methods of dewatering sludge, with primary emphasis on concentration by centrifugation, with aim being to dewater sufficiently to dispose of solids as sanitary land fill.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

GRW 10/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: S. B. Foot Tanning Company
Red Wing, Minnesota

TITLE OF PROJECT: "Aerobic Biological Treatment, Sludge Dewatering and Disposal and Effluent Reuse for a Side Leather Tannery"

PROJECT SITE: Red Wing, Minnesota

DATE AWARDED: May 15, 1968

FEDERAL GRANT: $475,000

TOTAL EST. PROJ. COST: $2,046,268

PROJECT NUMBER. WPRD 232
12120 DSG

PPBS NO. 1212

DESCRIPTION OF PROJECT:

The four year project will provide a full scale demonstration and investigation of primary sedimentation, biological secondary treatment utilizing aerated lagoons, and primary and secondary sludge dewatering and disposal by means of pressure filtration and incineration. The system will treat the total waste flow of 2.1 MGD from the side leather tannery. In addition an evaluation will be conducted to determine the influence of final treatment plant effluent reuse on hide processing and quality of the finished product by reusing it in the "limepaddle" and "wash soak" tanning operations.

INQUIRIES: *Contact the* INDUSTRIAL POLLUTION CONTROL BRANCH, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

8/68

PO 887-996

~~Mrs.~~ Coolidge: Please note -- not a duplicate!!

1 Accession Number W70-04045	2 Subject Field & Group 05G, 17D	**SELECTED WATER RESOURCES ABSTRACTS** **INPUT TRANSACTION FORM**

5 Organization
Federal Water Pollution Control Administration, Washington, D.C.

6 Title
PROJECTS OF THE INDUSTRIAL POLLUTION CONTROL (BRANCH FEDERAL WATER POLLUTION CONTROL ADMINISTRATION)

10 Author(s)
William J. Lacy

16 Project Designation
FWPCA Project 12000 --- 01/70

21 Note
Available [illegible] house as PB 189 766, $3 in paper copy, 65¢ in microfiche.
Up-dated version of report ~~by~~ with same title of August 1969 (See Vol 3, No 6, W70-02815).

22 Citation
FWPCA Water Pollution Control Research Report, ~~August, 1969~~ January 1970.
167 p, 9 tab, 4 fig

23 Descriptors (Starred First)
*Industrial water *Water Pollution Control Wastewater treatment *Water reuse *Water Pollution treatment Industries Water Quality Water Requirement

25 Identifiers (Starred First)
Industrial pollution control

27 Abstract
The objective of the industrial pollution control R&D program ~~is~~ was to develop and demonstrate the required technology to achieve required degrees of pollution control by lease cost methods for all ~~significant~~ industrial sources of pollution. This report includes summaries of ~~143~~ 150 research, development, and demonstration efforts necessary to resolve industrial pollution problems. A total of 1200 program efforts are listed in tabular presentation. These projects include the latest developments in physical, chemical, biological, and combinations of treatment methods. It is expected to develop further the cooperation of industry to participate in meaningful pollution abatement demonstrations and to increasingly demonstrate the feasibility of in-plant measures, by-product recovery, and wastewater reuse as methods to abate pollution and to reduce treatment costs. Research through in-house efforts and by contracts to industries and universities are to complete state of the art studies related to treatment and control technology for selected industry groups. Research through in-house efforts and by contracts to industries and universities are to complete state of the art studies related to treatment and control technology for selected industry groups. Industrial wastewaters are to be identified, characterized, quantitized, and classified for all industries of pollutional significance.

Abstractor
Institution

SEND TO: WATER RESOURCES SCIENTIFIC INFORMATION CENTER
U.S. DEPARTMENT OF THE INTERIOR
WASHINGTON, D. C. 20240